Report on

DEVELOPMENT OF INDIA'S HANDLOOM FABRICS FOR EXPORT TO THE UNITED STATES OF AMERICA

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by

The Handloom Fabrics Survey Team
Invited by the Government of India
with the cooperation of
The Ford Foundation

September, 1957

DEVELOPMENT OF INDIA'S HANDLOOM FABRICS FOR EXPORT TO THE UNITED STATES

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September, 1957

Mr. S. Ranganathan
Secretary, Ministry of Commerce and Industry
Government of India, New Delhi.

Dear Sir,

We present herewith the report which the Government of India has asked us to prepare on possibilities and methods for expansion of India's handloom fabrics exports to North America.

We are convinced that the opportunity exists for much larger sales of Indian handloom fabrics in the United States than are being made at present. These sales would be mainly in the "quality" market, not in competition with the mass-produced, low-priced textiles which the United States already produces with great efficiency by machine methods. This quality market will eagerly accept and if necessary will pay high prices to obtain fabrics of distinctively beautiful design and high craftsmanship such as India is eminently capable of producing. The fabrics must, however, be of first quality materials, processed by carefully controlled methods at every stage so as to meet the rather exacting requirements of a market which is used to technically perfect products. They must be imaginatively styled so as to blend the richness of India's traditional artistry with the current living patterns of America, and they must meet the requirements of the American fashion industry and home furnishing industry with respect to such mundane points as lengths and widths of pieces and methods of packing to prevent damage in shipment.

We believe that action along the lines suggested in this Report can result in a substantial development of handloom exports to the United States. This in turn will bring more employment and larger earnings which will help handloom weavers and their families; also it will provide much-needed foreign exchange which India can use for the purchase of equipment to carry through its Second Five Year Plan. In addition, the improved production and marketing methods recommended for increasing exports to the United States should help, by example and in other ways, to lift the standards of the whole handloom industry.

We started our survey of India's handloom fabrics in Bombay on the 26th of October 1956. We proceeded then to Banaras, Bhagalpur, Calcutta, Hyderabad, Bangalore, Trivandrum, Madras, and New Delhi. A detailed itinerary showing places and institutions visited appears in Appendix A of the Report. The full team was present in India through the 29th of November, and two members stayed on for a further period to complete and check portions of the survey.

On our tour we saw at first hand the craftsmanship of the weaver, the raw materials and equipment with which he works and the conditions under which he works in cities, towns and villages. We conferred with many representatives of cooperative weavers and private weavers. We inspected textile institutes and schools, spinning mills, dye houses, sales emporia, and shops of private merchants. We feel that despite the short time at our disposal we obtained a very good view of the capabilities and problems of India's handloom textile industry.

Everywhere we met with the utmost friendliness, consideration and cooperation. We want to thank most sincerely the officers and staff members of the All-India Handloom Board and the Textile Commissioner's Office who accompanied us and exerted themselves so faithfully to make our work effective and our tour pleasant.* Likewise we are grateful to the many officials of State Governments, local representatives of the All-India Handloom Board, officers of cooperative societies, independent merchants and weavers who arranged our visits, demonstrated handloom methods and products, and participated in discussions. Finally we want to make special mention of our gratitude for the contribution of Mrs. Elizabeth Bailey Willis, Adviser to the All-India Handloom Board. Her knowledge and long experience with the Indian hand woven industry was immensely valuable to the team.

Although we concentrated on handloom fabrics, we could not help but sense the broad significance of the magnificent effort being made by India's Government and people to attain rapid economic and social progress within a framework of political democracy and freedom. It will be a source of lively satisfaction to us if our recommendations contribute in some small way to the success of this effort.

Respectfully submitted,

Boris Kroll
(Textile Designer & Manufacturer)

Bonnie Cashin
(Fashion Designer)

Robert A. Hickerson
(Textile Engineer and Silk Expert)

*Shri N.N. Tikku, Deputy Director; Miss Shone Ray, Deputy Director; Shri S.R. Ramakrishnan, Assistant Director; Shri R. Ramaswamy, Technical Superintendent; Shri J. G. Worlikar, Photographer; Shri A. P. Ramanathan, Reporter.

INTRODUCTION : PURPOSE OF THE SURVEY

The Government of India (Ministry of Commerce and Industry). with the cooperation of the Ford Foundation, invited an American team consisting of

Mr. Boris Kroll, Textile Designer and Manufacturer
Miss Bonnie Cashin, Fashion Designer

Mr. Robert A. Hickerson, Textile Engineer and Silk Expert to advise it on specific next steps which should be taken in order to develop a substantial export of handloom textile products to North America.

The terms of reference for the team were :

1. To advise the Government of India regarding the opportunities, problems and recommended methods of procedure for developing substantial export marketing of handloom fabrics, particularly to North America.
2. To visit a number of the principal centres of production of handloom fabrics in order to study how production can best be organized to meet the requirements of export markets.
3. To inspect the types of goods available at various marketing centres, in Government emporia, in exhibitions and in commercial salesrooms, and to advise as to the suitability of these goods for export or how they might be adopted to meet export requirements.
4. To make a study of existing organizations in India for export marketing of handloom fabrics in relation to the organizations and business practices by which such products are distributed in North America and in relation to requirements that must be met in order to build up a good export market in that area.
5. To become familiar, prior to coming to India, with existing arrangements in North America for promoting and handling imports of Indian products and with the opportunities and problems suggested by past experience.
6. To submit a written report in which, besides appropriate

observations and recommendations arising out of its general assignment, the team would answer the following specific questions :

> What type of organization is required in India and America in order to develop, service and maintain (a) the production of improved handloom fabrics suitable for export and (b) the marketing of these products in the most effective manner in North America ?

At a meeting held in Bombay shortly after the team's arrival in India, the team received further orientation to its task from officials of the Ministry, the Textile Commissioner and the All-India Handloom Board. At this meeting it was given a detailed list of specific questions concerning the requirements of the American market, the adaptability of Indian handloom equipment and skills to supplying this market, and the organizational and other measures which might be recommended in order to bring about the desired expansion of handloom exports.

The team has found these questions most useful in assisting it to direct its observations towards those points on which the Government of India especially desired its advice. We, the members of the team, hope that the chapters which follow respond adequately to the requests made of us in the official terms of reference and in this supplementary list of questions.

SUMMARY :

GENERAL CONCLUSIONS AND PRINCIPAL RECOMMENDATIONS

Before proceeding to detailed observations we believe that it will be useful to summarize our general conclusions and principal recommendations as to the possibilities for expansion of India's handloom exports to North America.

GENERAL CONCLUSIONS

India produces some of the most beautiful handloom fabrics in the world. We are convinced that many of these can find a large sale in the United States *provided steps which we will describe in detail later are taken to insure proper quality and effective marketing.*

In Chapter 2 we discuss more specifically the particular types of Indian handwoven fabrics which, in our judgment, are especially adaptable to the American market. We also suggest ways in which imaginative design and styling can be used to give them maximum appeal. For example, we felt that Indian silks of mulberry, spun and Tussar varieties would be of special interest in U.S. quality markets. Beautiful border designs, inlay patterns and warp dyed prints were also impressive. The endless designs in the saree could be converted to many uses which would fit the American pattern of living and lead to substantial sales in America. We saw a great array of cottons in distinctive plaids and patterns which should go well in the United States. We liked the sheer cottons with unusual border designs and inlay motifs and are confident that the American consumer will like them, too. Leno and Jacquard weaves offer good possibilities for export to America, as do many of the mixed fibres woven in India. Many local techniques have development possibilities, such as the Almora shawls.

We are informed that India is now producing annually about 1,600 million yards of handloom cloth of which only some 50-60 million yards are exported. Most of these handloom exports go to

Ceylon, Nigeria, and other countries of South-east Asia and Africa; only a very small quantity, too small to be separately reported in statistics published by the All-India Handloom Board, are sold to the United States.

One of the reasons why exports of Indian handloom fabrics to the United States is so small is that India's handloom industry is geared largely to the production of cloth for utilitarian needs and for a consumer group in which low price is a dominant consideration. It is important to understand that India's opportunities for sale of handwoven goods in the United States are of an entirely different character. There is no possibility of selling ordinary, plain handwoven fabrics in the American market. The machine textile industry in America and in other countries from which America is able to buy can produce the cheaper and less distinguished fabrics in enormous quantities and at low prices with which handloom weavers cannot hope to compete successfully.

At the same time, there are many effects possible to the skilful handloom craftsman which cannot be duplicated on a power loom, at least not at reasonable cost, or which cannot be done economically by machine because of the relatively small quantities required in each pattern. And there is a portion of the American fabric market—the market for fabrics of highest quality, unusual colour and beauty, and distinctive design—in which we believe that India's handloom fabrics can compete very successfully if proper steps are taken. This market for quality fabrics, though only a tiny fraction of the huge textile market in the United States, is nevertheless capable of absorbing what would be, in terms of India's present exports, a very large volume. In fact, if India were to succeed in building its handloom exports to the United States to a volume as large as its total present handloom exports to all countries this would hardly cause a ripple in the United States market. America's total textile consumption is measured in billions of yards.

It is quite feasible, in the estimation of the team, to build up very large sales in the United States quality market *provided* certain conditions are met. The handloom industry of India must establish higher standards of quality, starting with selection and dyeing of yarn and continuing through control of production, finishing and export packaging. The standard of quality in production and care in export inspection must be such as to make India's handloom fabrics fully comparable in quality standardization with the output of the leading textile producing centres of the world. Specifically :

1. The raw materials used in handloom fabrics for export of the United States must be of the highest quality. Cotton yarn, for example, must not only be combed but also mercerized. For many fabrics mercerized cotton yarns must also be gassed.
2. The dyes used to process these raw materials must be of the best quality. They must have a high affinity, for fastness to washing and fastness to sunlight. The methods used in dyeing must be modern and effective, as recommended and practiced by qualified dyers and textile technologists all over the world.
3. The weaving must be of the best that India has to offer.
4. The length of handwoven fabrics should be not less than 40 yards per piece, preferably 60 yards, and widths must be standardized.
5. The methods of packaging must incorporate rolling of fabrics on paper tubes or flat boards, which is standard practice in the textile world, and the completed roll of fabrics must be wrapped securely to insure protection.
6. A system of quality control must be established, consisting of testing and supervision at all stages of production, in order to maintain proper standards; a final quality stamp will certify that the fabrics have been produced in accordance with these standards.
7. India's heritage of designs and colours should be continually developed and expanded on the basis of (1) creative research in India and (2) information about the requirements of the U.S. fashion industry and home furnishings industry.

In the chapters which follow we shall attempt to explain in more detail the opportunities offered by the United States market, the reasons for the rather exacting requirements which must be met by those who wish to cultivate this market and the measures which in our judgment should be taken by the Indian Government and the Indian handloom industry in order to exploit this market successfully.

While we have concentrated in our Report on the development of the market in the United States, we should like to point out that the measures recommended will also make it possible to export more of India's quality hand woven fabrics to other parts of the world such as South America and Western Europe. They will likewise assist in developing new sectors of the internal market within India.

PRINCIPAL RECOMMENDATIONS

In Chapter 4 we present a recommended development plan for building up India's handloom fabrics exports to the United States. The principal features of the plan are designed to meet three major problems: the problem of quality standards, the problem of imaginative and effective marketing, and the problem of personnel development. Specifically, we recommend :

1. That the Government of India establish a corporation to be known as the India Handloom Fabrics Export Corporation. This corporation should have a Weavers Service Division, which would set up and operate the Weavers Export Service Centres described below, and a Sales Division, which would set up and operate Sales Centres in New York and Bombay as described below.
2. That there be established five Weavers Export Service Centres located in
   - (a) Banares—to serve U.P., Lucknow, Farukhabad.
   - (b) Bombay—to serve Bombay, Poona, Nagpur Chanderi and Maheswar.
   - (c) Madras—to serve the City proper, Andhra, Hyderabad and part of Madras State.
   - (d) Calcutta—to serve Orissa, Bhagalpur and Patna.
   - (e) Coimbatore—to serve Salem, Kerala, and Madurai.

   The Service Centre should serve both the cooperative weavers of its area and the private weavers. The functions of a typical Service Centre will be to furnish tested quality yarns, dyed, wound and warped to the weaver. All these processes will be quality controlled by the laboratory.

   The typical Service Centre will have eight departments :

   - (a) Raw Materials—This department will purchase yarns and will control yarn inventories. It will handle incoming yarn for processing.
   - (b) Fabric and Dye Laboratory—This department will test

all fibres and will formulate a wide range of stock colours. It will work with the chief inspector as to standards for certification of finished goods.

(c) Central Dye House—This department will dye yarn, using formulas supplied by the laboratory, using both the methods of skein dyeing and package dyeing.

(d) Winding and Warping—This department will wind yarn on spools for filling, which will be quilled in the weaver's house. This department will also make the warps to be furnished to the weaver.

(e) Inspection, Certification and Shipping—This department will use field inspectors to spot check the weavers' work in their individual homes, and will inspect the finished fabric at the Service Centre. Where possible fabric defects (such as knots, warp skips and filling skips) will be mended by burlers or menders. In cooperation with the laboratory, the fabrics will be certified as to meeting the quality standards necessary for export. It will roll fabrics, wrap and deliver to one of three ports—Bombay, Madras, Calcutta.

(f) Design—This department will develop designs, weaves and colour combinations in handloom fabrics for export. It will work with the dye laboratory in developing a standard colour palette. It will develop a large selection of samples to be used by the Sales Division of the India Handloom Fabrics Export Corporation.

(g) Sample Weaving and Training—This department will be used by the Design department to experiment with new weaves, colour combinations and designs. It will also be used to develop new samples for export sales. The department would also undertake to train selected weavers in the art of handweaving and to work with the inspection and other departments in giving advice that would help to raise the level of weaving technique in the area.

(h) Loom Parts and Training—This department will manufacture loom parts necessary for converting present looms into looms able to produce a minimum of fifty yard lengths in one piece. It will also stock parts for the loom necessary in the weaving of quality fabrics and train personnel in the manufacturing of these loom parts.

3. That the first or "pilot" Weavers Export Service Centre be established in Banares. The pilot centre would be started by a specially selected team of India's ablest handloom technologists and designers which might be known as the India Handloom Technology Team. In Chapter 4 we discuss more specifically the qualifications of Team Members and the total number recommended. It is recommended that the Team be sent to the United States for a minimum of two months to purchase equipment for the pilot centre and to observe textile quality standards in the United States and textile processing techniques including visits to two American textile colleges. Once the pilot centre was in running order the same Team, together with other men selected and trained by them, would establish the other four centres.
4. That a New York Sales Centre be established by first selecting an American of outstanding ability and a thorough merchandising background to whom complete authority could be delegated. This man is to be known as the Managing Director of the Sales Division of the India Handloom Fabrics Export Corporation. The proper selection of this man is of prime importance to the success of the export programme.

   The Centre would be housed in a building which should reflect individuality and should preferably have three floors, to house three areas of activity.

   The ground floor we envision as a retail showroom for consumer sales of not only handloom fabrics, sarees and fashion accessories but for all types of home furnishings accessories and handicrafts from India. The atmosphere would be that of a fashion bazaar. It should be a most exciting stage setting for India, and also of great cultural value, as well as carrying healthy sales potential. The sales persons should preferably be Indian, dressed in handsome national fashion. The object is to project *India* and make it impossible for the visitor casual or purposive to walk away without having been tempted by some momenta. The first floor (second floor, in American parlance) is envisioned as housing the Wholesale Sales and Buyer's Service for both fashion and home furnishings fabrics. This is the operation of primary importance and the division where India will be able to realize the largest dollar volume. This department would either accept orders for which it would take full responsibility for execution and delivery, or it would provide information to buyers on the basis of which they might make their own direct approaches to qualified sources of supply in India.

Also, on the first floor will be the Design and Sample Weaving department. This department would work with wholesale buyers in developing fabrics which India would be able to produce. It will be staffed with weavers and looms from India.

The second (third in America) floor of the building would accommodate the administrative offices and Public Relations departments. The Public Relations department would endeavour to maintain a consistent flow of news pertaining to India's handloom fabrics, interpreting them to magazines, newspapers, radio and other media. It would be necessary to maintain carefully selected stocks of fabrics in a warehouse in or around New York. This warehouse will also carry complete stocks of the handicrafts sold in the retail sales showroom.

5. That Bombay Sales Centre be established. This Centre will be under the jurisdiction of the Managing Director of the Sales Division of the India Handloom Fabrics Export Corporation, whose main office is in New York. The head of the Bombay Centre should be an Indian familiar with the Indian Handloom Industry possessing a personal sense of responsibility. This Centre which will have a Wholesale Sales and Buyers Service will both receive orders from the New York Centre and will write orders placed by American buyers in India. Only certified fabrics will be handled. This Centre will control and distribute orders to one of the Five Weavers Export Service Centres.

   The Public Relations department would gather information on India's Handloom fabrics for promotional use in the United States.

   There will be a Retail Sales department designed for the tourist trade. In addition to handloom fabrics there would be a stock of accessories made from handwoven fabrics on sale. At present there is not a great enough variety of small items for the air traveller to buy. With the sure-to-grow tourist business, the handloom industry should put much design effort in this direction.

6. That a number of steps be taken to increase the supply of trained textile technologist and fabric designers.
    - (a) by the government expanding and improving the facilities in the textile institutes in India.
    - (b) by the revision of the curricula to place emphasis on textile chemistry and dyeing and the manufacturing of quality fibres.
    - (c) by stressing hereditary design as opposed to "Western" designs and a misunderstood concept of Western preferences.
    - (d) by the Government. in co-operation with the handloom industry sponsoring scholarships to textile institutes throughout India.
    - (e) by the Indian Government sponsoring of a program which would send Indian students to textile institutes in the United States.
    - (f) by the establishment of an export advisory council with the help of the Indian Standards Institute, to keep the Export Service Centres informed as to developments in the textile world.
7. That, as a part of the effort to cultivate the American market, steps also be taken to stimulate an awareness of American fabrics requirements and the way in which they are conditioned by industrial methods and living patterns. This should reach Indian weavers, designers, etc. etc. through such means as :
    - (a) seminars with leading people from the American fashion and home furnishings industries-designers, manufacturers, decorators.
    - (b) American books, magazines, newspapers and films.
    - (c) Fulbright or other grant students from the United States teaching in India.
    - (d) retired teachers or professors is in the textile field teaching in India.

A few able leaders in India's fabric field have realized the need for a re-evaluation of the tools and skills at hand. The time is ripe for new directions for India's most indigenous talent-weaving. Help, advice, information is being eagerly sought from other countries which are ahead in organization. All sides of this problem—to put more hands to work, to produce a product which can compete strongly with other countries and to market it successfully—are being examined by

India in all lights. This is healthy. The attitudes are right. The future must be bright. But there is much to be done—and it cannot be done by simply knowing the problem or listening to consultants. It must, in the end, be done by India herself.

CHAPTER 1

ON CULTIVATING THE AMERICAN FABRICS MARKET

There are two huge and complex "Industries" in the United States which could become substantial buyers of India's handloom fabrics. One is called the fashion industry, the other the home furnishings industry. If India desires to develop handloom exports to the United States, on understanding of the requirements and established business procedures of these two fabrics-consuming industries is imperative. We shall briefly describe a few salient characteristics of each, especially those which have an important bearing on possibilities for marketing of handloom products. First, however, there are a number of points common to both which should be mentioned.

In cultivating the American market, the would-be seller must take the initiative in discovering what will appeal to the consumer, in designing and producing it and in offering it to buyers. The team repeatedly heard the request from weavers and merchants during its tour in India, "Tell us what you want in America and we'll make it." In Chapter 2 we shall attempt to meet this request in part by pointing to certain types of handloom fabrics which, in our judgment, would be likely to find a ready acceptance in the American market and by suggesting some new developments in design and style. But our response must of necessity be rather general. The point we would emphasize is that India, if it wants to sell substantially in the United States, must itself assume the responsibility of fabric design development, which is never-ending responsibility and must be based on continuous study of the intended market. We are glad that India is taking steps to build up its own design centres and design talent. It would be well also for India to make use in this connection of American style consultants in the various fields in which handloom fabrics can be used.

In America the responsibility for fabric design and development is assumed by the seller. Buyers and designers for the fashion and home furnishings trades may from time to time suggest ideas loosely, or on occasion even quite specifically, but there is much to be bridged between the idea and its successful development into a marketable product. Very few American designers or manufacturers can afford the time to develop a fabric in India, no matter how much they may desire to do so. The Indian handloom industry, must, therefore, approach the American market with a willingness to study the needs and peculiarities of that market and with a continually creative attitude. It is this attitude which will weigh the balance between success and mediocrity.

India's handloom exports to the United States will have to compete with the best that the world has to offer. To every designer, manufacturer and buying office in the United States comes a steady flow of offerings from every world source of supply. Back of the offered merchandise are months and sometimes years of development by some enterprising person or group. Samples are viewed by the buyer. He rejects or accepts as his needs and tastes dictate. He may sometimes suggest a variation on a theme or a preference for some design direction if he has had previous satisfactory service from a particular source of supply. The vital information supplied with the sample as to price, content, time of delivery, etc. is assumed to be accurate and dependable. Service is expected. Time and energy are valuable and the buyer favors those sources of supply which save him both. This is India's competition.

A climate of confidence is necessary for a healthy business relationship, and the successful seller understands this thoroughly. In discussions with merchants and designers in the United States about purchases from India, we have heard too often such remarks as,

"We were delighted with the sample, but the ingredients were changed on delivery. "Too uncertain information." "Too uncertain delivery." "Good promises but no follow-through." "We don't want to do business the hard way."

The United States fashion and home furnishings industries have been built on the energies of resourceful and enterprising men and women. They welcome and seek new ideas and resources, and they are willing to spend a certain amount of time and money to this end. But there is a point beyond which the trouble and expense of doing business "the hard way" will close the door to what could and should be mutually beneficial transactions. India must make it easy and satisfactory for American buyers to draw upon its rich resources of handloom fabrics.

THE AMERICAN FASHION INDUSTRY

In America most clothing is purchased "ready made" from specialty stores or department stores, which in turn buy their stocks from manufacturers, large or small. A minor fraction of the total is produced directly for the consumer by a custom tailor or dressmaker or is made in the home where it is used. Thus, in the United States the purchasing of fabric for clothing is done mainly by manufacturers or their agents, and the fabric is made into clothing by factory production methods. These production methods impose certain requirements as to widths and lengths of pieces which may not seem important to a person familiar only with the Indian environment but which are important to the American manufacturer.

Fabrics produced for use within India do not for the most part, have to be suitable for manufacture in garments by factory processes. Fabrics produced for the Indian market do not have to face the problem of "cut and sew," draping being the national fashion in clothing. In America, however, the situation is quite different, and with the desire for a greater export trade it is most important that the Indian handloom industry become aware of the implications of this fact.

A fabric for the American fashion industry must do many things besides appealing to current fashion tastes and satisfying a need for beauty. It must cut easily without slipping under the scissors. It must sew well by machine, not snag or pucker when stitched. It must not pull at the seams when worn. A buttonhole must be able to be worked neatly. Hooks and eyes must hold in the fabric. Seams must not ravel unduly. Selvedges should be straight and clean.

Short lengths of fabrics and irregular width are serious handicaps in the American market, except for custom dressmakers and home sewers (which are of minor importance). Preferred length of pieces are 40 to 60 yards. Preferred widths are 39" to 42" for most silks and cottons, 45" or more for sheer fabrics which are usually made into full, voluminous style, 54" for woollens.

In recommending uses for handloom fabrics in various United States Markets, it must be kept in mind that the final decision of the buyer which consummates the sale is based largely on the eye appeal of the fabric. The buyer automatically assumes the fabric to be technically perfected and reasonably guaranteed. His whole concern in selecting goods for clothing manufacture is *fashion*. Though tastes naturally vary, the basic trends are usually led by a relatively small group of fashion designers whose authority has been proved and whose leadership is accepted by the American consumer.

The American pattern of living-busy working day at home and office for both men and women, very few servants, little formality, more outdoor living accelerated travel, etc.—conditions the choice of clothing and exerts a steady influence on the fashion designer and the entire manufacturing Industry.

American women lead surprisingly active lives and enjoy great variety in their wearing apparel. New wardrobes of the middle and upper income brackets (these are the natural audience for India's quality fabrics) consist of "occasion" clothes, clothes for day wear, clothes for country, for city, for travel and for various degrees of formality such as dinner, theatre and dancing. Also clothes for various sports such as swimming, tennis, golf and other leisure hour activities. It is the understanding of this which gives direction to the whole United States fashion industry and, in turn, to the fabrics market.

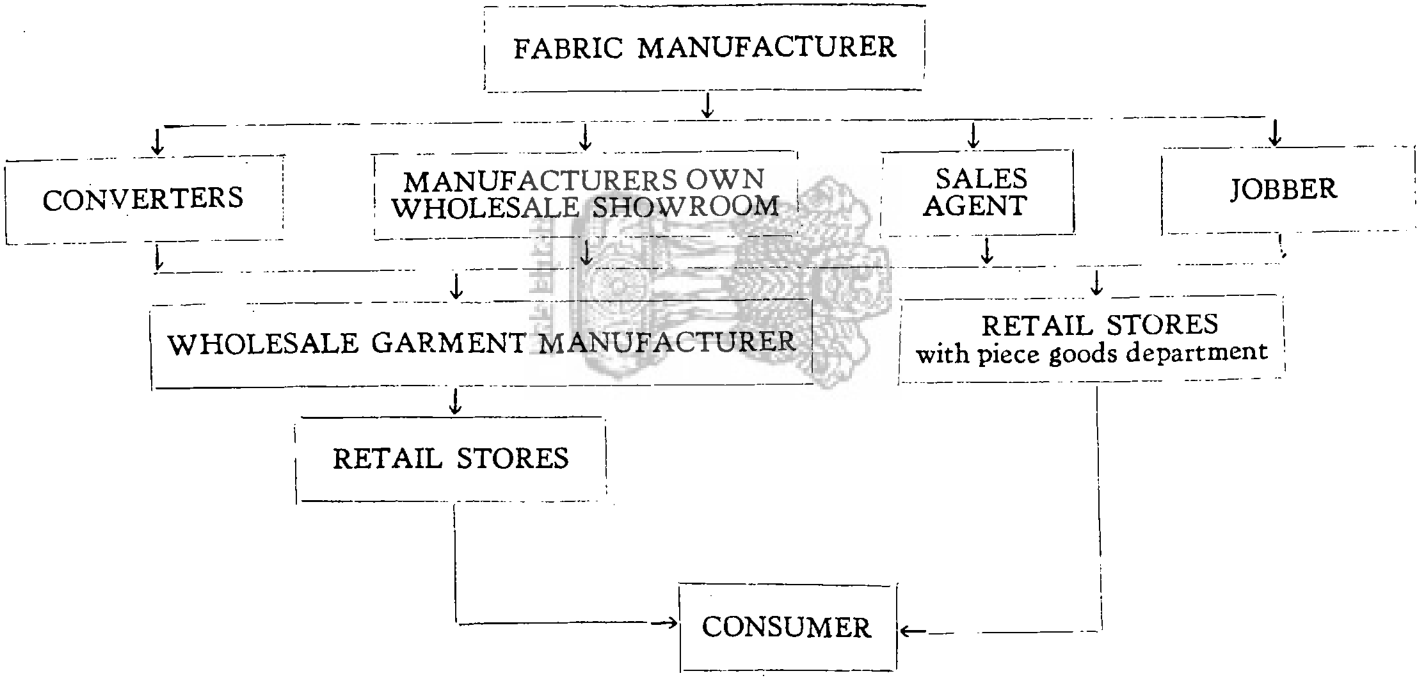
The manufacturers' fabric needs are based on seasons, usually three collections yearly, but sometimes as many as five or six. Then there are regional needs which condition the choice of fabric weights and colours.

Manufacturers usually specialize in defined categories. Although there are a few top designing houses which produce general wardrobes, some of the more flourishing specialized groups are sportswear, separates, suits and coats, dressy clothes, at home clothes, evening wear, lingerie, bathing suits, rainwear and accessories. There are also various markets which cater to specialized size ranges, such as the junior field, children's wear, the sub-teen group, etc. There is a large men's wear market, and although it is more standardized than the women's field, a good deal of "fashion" is continually accented. The men's wear market also comprises various types of manufacturers, such as those making shirts, suits, underwear, sportswear, etc. All of these markets together, within the general framework called the "fashion industry", consume an astronomical amount of fabric.

CHART 1.

CHART 1.

FASHION FABRICS—DISTRIBUTION FLOW CHART


FABRIC MANUFACTURER
CONVERTERS
MANUFACTURERS OWN WHOLESALE SHOWROOM
SALES AGENT
JOBBER
WHOLESALE GARMENT MANUFACTURER
RETAIL STORES with piece goods department
RETAIL STORES
CONSUMER

Obviously, if India chooses to expand its exports to this many-faceted U. S. market, the selection of patterns and colours to be offered must necessarily be large. The American fashion market is geared to "the theory of the obselete." That is, a fashion which wins favour today is expected to rise to a peak of popularity and then gradually decline. This means a constant flow of fresh designs and continued experimentation for new effects. In saying this, however, we do not mean to suggest that India's handloom industry should attempt to appeal to the American consumer by turning to current American or European themes and neglecting India's own rich storehouse of ideas. On the contrary, we earnestly advise that India's handloom fabrics for export to the United States should, so far as possible, retain on inherent character which is uniquely Indian, varying and adapting and building upon timeless Indian themes. Such fabrics, made to high standards of quality and adapted in suitable ways to American technical requirements and living patterns, should command a price and position of their own and find a ready demand in the market for quality goods.

Outside of a small group of high priced custom dressmakers, there is not a great demand in the United States for the extremely elaborate designed fabric. However, the skill and artistry with which this kind of fabric is made can well be a great contribution and inspiration in fashion if simplified in design.

The handloom fabric has very special qualities which will always be an asset to the discriminating fashion market. There are certain effects and techniques which can only be hand-done and are above competition. Also it is easier for the pace-setting designers, who have a smaller clientele but influence a vast audience, to work with handweavers in developing special ideas.

Finally, the importance of maintaining quality and unique styling in exports to the United States fashion market cannot be overstressed.

THE AMERICAN HOME FURNISHINGS INDUSTRY

The home furnishings in the United States has a tremendous potential buying power. There are 50 million households in the United States, many in private dwellings and many in apartments or flats. The desire to adorn these shelters follows immediately upon the need to acquire the shelter. With the newly married, a complete set of furnishings for the home is usually required. Others, most often, have possessions from a previous dwelling. Whether starting fresh or working with existing objects the approach followed in decorating the home is more or less the same.

The individual family, knowing its habits of living and personal tastes, decides on an over-all style to be followed. The type of furniture desired is selected, and the colour scheme of the individual rooms is chosen. Fabric is the main tool used to create colour in the home. The colour of the backgrounds—walls and floor covering—coordinates with the upholstery and drapery fabrics. Colour accents are created by the use of pillows and accessories.

Some housewives feel they are capable of selecting the many things that go to make up a home-furniture, fabrics, lighting, floor coverings, accessories, etc. Many feel the necessity of calling in an expert—the interior decorator. This expert, trained and experienced in the use of colour, design and spatial relationships, is an invaluable aid in coordinating the needs of the family with the specific selections made in home furnishings.

Whereas the individual housewife must use the retail department store and the small home furnishings store as her source of supply, the interior decorator has access to the wholesale showrooms of the manufacturer and the jobber, and has a wider range from which to make a suitable selection. The most important drapery and upholstery jobbers are members of the *Upholstery and Decorative Fabric Jobber Association of America.* In the case of upholstery and drapery fabrics, the jobber makes available to the decorator and department store sample books containing a single pattern woven in various colourings. The designs, textures, and colour combinations have been developed by the mill in conjunction with the jobber's stylist.

The wide-spread construction of office buildings has created another area where quality upholstery and drapery fabrics are demanded. Frequently the architect, in maintaining the integrity of design conception, will specify the furnishings and fabrics to be used in the offices and public areas such as lobbies, dining rooms, and lounges in his building. Other times, the interior designer is called in and with his experience in planning makes his selections from the wholesale showrooms of the manufacturer and other jobber. Furniture manufacturers and upholsterers display fabrics of the manufacturers and jobbers on their furniture, as well as in actual form. This policy facilitates the choice made by the decorator and designer.

More and more dollars are being spent annually in the United States on quality furnishings in hotels, ships, trains, planes, schools, hospitals, theatres, as well as the mentioned business offices and private dwellings. There is a continued need for new design and colour concepts in upholstery and drapery fabrics and an evergrowing demand for quality merchandise.

The success of the manufacturer of home furnishings fabrics in America is the result of emphasis placed upon design, colour, scientific manufacturing, quality control and the system of distribution. The method of distribution are of the greatest importance for the success of a product. On the next page is a flow chart showing how high quality home furnishings fabrics move from manufacturer to consumer in the United States.

Fabrics to be exported for sale in the American home furnishings market must meet recognized quality standards with respect to abrasion, water bleed, wet and dry crocking and sun fastness. Since current American architecture gives so much attention to walls of glass, drapery fabrics in particular must possess a high fadeometer reading.

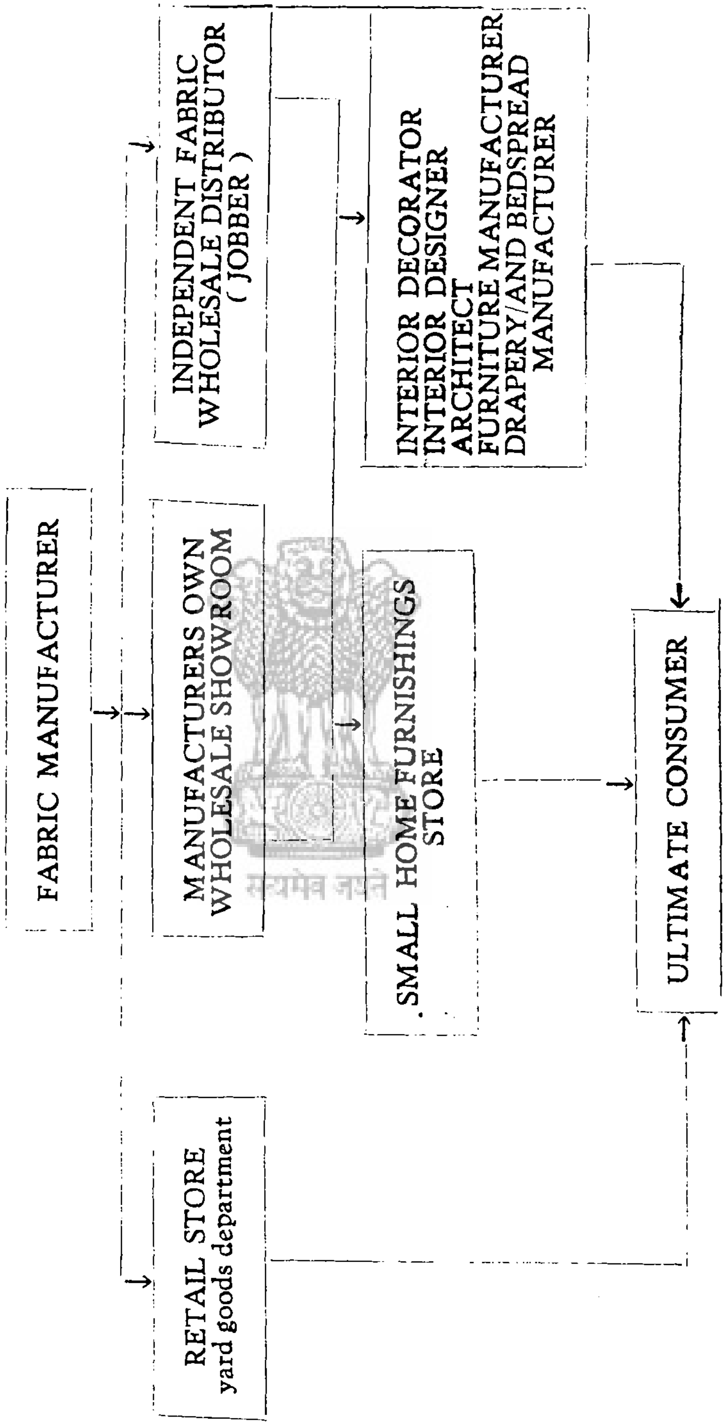
The designs of fabrics destined for home furnishings should be unique, yet not so highly styled as to create a one-time or fad type of market.

Some of the fabrics seen on our tour illustrate the varieties of handwoven products that might be exported for use as home furnishings in the United States. For example, at the Hyderabad Weavers Central Cooperative Association we saw heavy cotton fabrics which would be very satisfactory for the department store trade in bedspreads, drapery and upholstery. The block printing on handwoven fabrics, as seen in Hyderabad, would be suitable for drapery if coordinated in colour with a woven fabric of upholstery weight. The bottom border panel woven in 3 yard lengths and the inlay tissue

CHART 2.

CHART 2.

U.S. HOME FURNISHINGS INDUSTRY—DISTRIBUTION FLOW CHART OF FABRICS


FABRIC MANUFACTURER
INDEPENDENT FABRIC WHOLESALE DISTRIBUTOR (JOBBER)
MANUFACTURERS OWN WHOLESALE SHOWROOM
RETAIL STORE yard goods department
INTERIOR DECORATOR
INTERIOR DESIGNER
ARCHITECT
FURNITURE MANUFACTURER
DRAPERY/AND BEDSPREAD MANUFACTURER
SMALL HOME FURNISHINGS STORE
ULTIMATE CONSUMER

motif would be particularly good woven in widths from 48″ to 54″. Leno gauze looms are very good for weaving curtain fabrics.

Heavy silks such as the wild silk fabrics from Bengal woven at Bhagalpur would be excellent for upholstery if made in 50″ widths. The heavy silks and the handwoven mirrored embroidery could help to meet the great demand for the many varieties of pillow fabrics. The weight of most silk fabrics presently woven in India is too light for upholstery; the fabrics would not stand up against normal wear. However, a good quality combed and mercerized cotton used in the warp and a heavy silk filling would give the desired upholstery weight and would wear better than a 100 percent silk fabric.

It might be noted here that the weight of the warp required for good upholstery fabric is too heavy to be woven on a foot treadle loom. The best types of looms for this heavier weight are frame looms with Dobby attachments or Jacquard attachments. Positive shed Dobby looms with double box attachments are good for weaving heavy upholstery fabrics.

SOME PROMOTIONAL IDEAS

Getting a product through to the ultimate audience which it should reach, requires, we know, many diverse talents. Once design, quality control, production and merchandising are on their way to successful organization, a most important step is *promotion*. This term is a little hard to define accurately. Promotion creates a "climate" in the market. It clarifies the "idea", it spells out direction, it creates interest, it produces a feeling of good will.

For the promotion of Indian handloom products in the American fashion and home furnishings markets we recommend (see Chapter 4) that an Indian export sales organization make use of skilled professional consultants. The person or persons who assume promotion responsibility must be chosen with much discretion. Mere knowledge of procedure and experience is not enough. More important is personality and a creative approach to publicity and promotion. In the wrong hands these activities can either be pedestrian or-worse-evoke negative responses in the desired market.

In addition to promotional efforts which must be undertaken in the United States on behalf of Indian handloom fabrics, we wish to suggest some measures that could be taken in India. These measures by influencing buyers who visit India and by influencing tourists and other travellers, help to promote the sale of Indian handloom goods in America and other countries abroad, and at the same time they would help to develop a more discriminating internal market within India and thus establish more solid foundation for quality production.

Our first suggestion relates to the planes of Air India International and the Indian Airlines Corporation. Passengers on these airlines are a perfect "captive audience" to which India's story of her own handloom industry could be told. The clothing worn by the airline hostesses could be designed in an attractive yet functional manner to display some of India's beautiful handloom fabrics. There is an exciting and challenging design problem here-meeting the 20th Century need for practical apparel, yet satisfying the classic traditionalist. Why not a design competition sponsored by the All-India Handloom Board in cooperation with the airlines? Also, certain interior furnishings of the planes, such as draperies (but probably not seat coverings, because of the durability problem) could be used as important publicity and public relations tools for handloom fabrics. The best fabrics that India has to offer should be used. In each seat pocket there should be a brochure to call the passengers' attention to the fabrics used in the plane furnishings and in the costumes of the hostesses, to tell the romance of handweaving and to inform him by means of a beautifully illustrated map about the many types of interesting handloom fabrics produced in India and where he can buy them.

Our second suggestion relates to the use of fabrics in home settings, offices and places of public assembly. During our tour we saw very little of India's beautiful handwoven fabrics in India's own buildings, either for home furnishings or in public areas, and we feel that this should be corrected. We do not think that this is entirely a matter of economics, because India's handloom fabrics are reasonably priced in India and the labour required for hand sewing is not expensive.

An interior decorator from the United States might be invited to set up a few model room settings in the major hotels in the most important cities throughout India. These would be viewed both by the Indian public and by international travellers. The decorator should use India's handwoven fabrics for upholstery, drapery, bedspreads and pillows, demonstrating the utility and beauty of these fabrics for such purposes. Use should also be made of indigenous furniture and accessories (brass, etc.) so as to exhibit some of the best products of India's small industries and handicrafts.

Also, encouragement should be given to the use and exhibit of India's handloom textiles in public areas such as theatre and hotel lobbies. This would help to promote a demand for these fabrics within India and on the part of visitors to India. Furthermore, we suggest that each state co-operative society should sponsor decorative room settings in its area, where the uses of cooperative handwoven fabrics in the home would be demonstrated. This should be an annual exhibition. The standard of design, style and taste of the room settings should be very high in quality, though not too expensive. We are aware of the low income level of the average person in India, but feel that efforts of this sort are justified in order to bring a gradual improvement in the standards of taste and the artistic background for living. This type of exhibition will also be a means to encourage men and women in India to develop the trade of "interior decoration".

CHAPTER 2

INDIAN HANDLOOM FABRICS OF POTENTIAL INTEREST IN AMERICA

On our tour we visited emporia, exhibitions, cooperative and private shops and production centres, viewing all fabrics on display and some which had been especially obtained for our inspection. Thus we were able to examine not only the fabrics made in the producing centres directly visited, but also many others which originated in other producing centres in various parts of India. In the discussion which follows we have attempted to identify different fabrics by their general types and their areas of production, rather than by the places where we happened to inspect them.

We made a collection of fabric samples and prepared swatch books in duplicate, one set has been deposited at the Design Centre of the All-India Hand loom Board in Bombay. It is suggested that the other be sent to the Consulate General of India in New York to be held for the use of the proposed New York sales organization and its local advisory committee. We would also urge that the Design Centre of the All-India Handloom Board work towards the preparation of a completely documented file showing all of the fabrics of possible export interest which are available from the various production centres in India. On the basis of the documented information so compiled and illustrated, a "fabrics map" of India should be prepared and printed. This could be widely displayed, distributed to tourists and other visitors in India and made available to potential buyers abroad.

It should be emphasized that the fabrics represented in the collection mentioned above were selected for a variety of reasons to demonstrate weaving techniques, indigenous regional types, textures, designs or for reasons of study. In other words, the inclusion of a fabric in the collection does not necessarily mean that we think it suitable for export in its existing state, but only that it may suggest possibilities for development

The fabric types discussed later in this chapter are particularly recommended for development with a view to export to the United States. This is always on the assumption that the necessary steps will be taken to meet American technical requirements and quality standards, as emphasized in other chapters of this report. In some cases the existing patterns are excellent ; in others the technique is good but redesigning and styling are advised. It is important to remember that handloom fabrics must maintain superior design, as well as quality standards, to keep above the competition from the power loom.

THE QUESTION OF MACHINE WEAVING COMPETITION

The question may well be raised, Can India's handloom weavers hope to compete at all with the highly efficient machine production of the United States and of other countries which are eager to sell in the American market ?

Briefly, our answer is : India's handloom industry can compete successfully in the quality fabrics market in America, provided it learns to meet the standards of that market and sends goods of types which only handlooms can make. This quality market is large in terms of India's handloom capacity, though it is small in relation to the American fabrics market as a whole. The users of quality fabrics are willing to pay quite high prices for distinguished beauty and unusual design, colour or texture. We think India can be successful in this special portion of the American market.

On the other hand, India's handloom industry cannot possibly be successful in competing price-wise in an attempt to supply America with ordinary, less distinguished fabrics which lend themselves to machine production.

Yard goods in the United States are woven on power looms simple weaves on shaft looms, small patterns on Dobby looms, and complicated patterns on Jacquard looms. These looms are all powered by electric motors, and even the slowest can produce at the rate of 100 or more picks per minute. In recent years power looms have been developed with auxiliary equipment that automatically changes filling without the aid of the weaver and without stopping the loom. This equipment raises the production rate of a loom and also the number of looms that one weaver can operate. For example, the number of looms that can be operated by one weaver (approximately the exact number varying with the qualities woven) is as follows for the different types of power looms:

Type of power Loom	*Number of Looms per Weaver*
Ordinary shaft	8
Ordinary Dobby	8
Ordinary Jacquard	2
Automatic shaft	32
Automatic Dobby	32
Automatic Jacquard	12

The American weaving industry is constantly developing new equipment and techniques to increase the productivity of the individual weaver. The automatic changing of filling is only one of many such improvements. This high development of machine techniques is one of the reasons why the American industry can pay high wages to its weavers and other employees and at the same time produce fabrics at a low cost per yard. In our judgment. even though wages in India are much lower than in the United States, it would be hopeless for India's handloom industry to try to compete in the American market on a price basis by offering products of types which can be made by machines.

However, there are fabrics that cannot be made on power looms. or if it is technically possible to make them, it is not economical to do so because the costs of setting up the looms are too great in relation to the amount of the product that can be sold. This is the opportunity for the handloom craftsman and for the ingenious designer of handwoven fabrics.

In sending to America fabrics that cannot be adapted to machine production, India's handloom industry will meet practically no local competition (though it will have to compete with handloom products from some other countries). Handweaving in America is a hobby and a leisure-time craft. Handlooms are also used in developing samples for the machine looms. But regular production of handwoven fabrics for sale is insignificant, and costs are very high because of the high wages paid to labour in the United States.

Some of the technical limitations of the power loom, which give India's handloom products their opportunity, will be of interest. The maximum number of shuttles used on power looms in America is four. This means that the American machine weaver cannot use more than four colours for filling. At present, automatic looms cannot weave pick and pick. A new loom has been developed to overcome this limitation, but it will not be available for several years. Only a small amount of Leno weaving is done in the United States, due to the complexity of the necessary equipment. Under American production methods, the manufacturer's ability to produce for small orders is quite limited ; it does not pay to devote expensive machinery and an elaborate production organization to brief "runs" of a product.

The positive approach to India's export programme is the exploitation of those factors which make Indian handwoven fabrics unique

The following list of weaving techniques and fabric constructions which are difficult if not impossible to copy on power looms may be helpful. We have indicated the types of looms which are necessary :

1. Pit and frame Jacquard looms which can weave
    - (a) side border fabrics
    - (b) bottom border fabrics
    - (c) inlay tissue patterns
    - (d) the combination of inlay tissue patterns with borders.
2. Pit looms which can weave
    - (a) tie and dye fabrics
    - (b) plain weave fabrics with ombre or shaded yarn dyeing effects in warp and/or in filling
    - (c) plain weave cloth which is used as a background for
        1. mirror embroidery
        2. block printing
    - (d) colourful plain weaves, checks, plaids and stripes using more than 4 shuttles in the filling.
    - (c) Ikat type of pre-dyed warps
3. Pit looms with pressure harnesses which can weave
    - (a) inlay tissue patterns
    - (b) side border designs
    - (c) bottom border designs
    - (d) very fine, sheer silks and cottons
4. Jacquard Lenos which can weave
    - (a) very intricate open work patterns

5. Dobby frame looms
   (a) within intricate threading of warps
   (b) use of more than 4 colours in the filling

Another way in which India can achieve unique types of fabrics which will find a place for themselves in the American market and not be subject to copying by machines is through the use of India's own special raw materials. The weaving of yarns spun from mulberry silk such as raw silk spun silk and noils, and from non-mulberry cocoons such as Eri, Muga and Tussar. and gold and silver yarns would result in a fabric meeting little competition in the United States. Also, the combination of these silk fibres with India's best quality cotton would produce fabrics with excellent export opportunities. The United States does not cultivate any mulberry silk. All silks, both in yarn and finished goods, are imported from such countries as Japan, Italy and Thailand. The handwoven silks imported from Thailand are woven mainly with simple basket weaves creating plains, stripes, checks and plaids. This type of handwoven fabric has found a market in the United States because of the inspired colourings and the character of the silk yarn used in weaving, which is found only in Thailand. Thailand does not export any of its silk in either raw or yarn form. It is recommended that India restrict the exporting of silk in both raw and yarn form. India's mulberry silk industry should be encouraged to expand its production and in this way make available larger quantities of yarn for weaving into handwoven fabrics for export.

Finally, of course, India has unique resources in its rich traditions of design. Patterns that are special and indigenous to India, if properly developed for export, will be less subject to competition from other producers. They will be able to command a better price and speak eloquently for India. Development of unique designs and a discriminating use of colour and texture should be major concerns as soon as technical problems related to high quality standards are well on their way to solution.

India's handloom exports to the United States should be slanted to the needs of the higher priced fashion houses whose sponsorship puts a stamp of authority on fashion directions, and to the high-quality segments of the home furnishings market. The yardage consumed by these sectors of the American fabrics market is obviously only a small percentage of the vast total of fabrics consumption in

America. But in terms of India's handloom capacity the consumption of quality fabrics is large. In appealing to this audience India's best fabrics would find their rightful place.

To sum up, there are basically three recommendations for success in exporting India's handwoven fabrics to the United States in the face of machine competition :

1. Use looms and weaving techniques indigenous and unique to India, but add improvements which make it possible to meet the technical and quality standards to which the United States market is accustomed.
2. Use quality raw materials, and especially those with unique characteristics found only in India or in which India has outstanding advantages.
3. Use and develop beautiful and unique designs, colours and textures, especially those based on India's own heritage.

The Indian Government's strong belief in the Indian handweaver and his way of life is an indication that handweaving in India will continue for a long time to come. The handweaver plays an important part in India's economy. Though the economy is growing and modernizing, which will influence the eventual conversion of many handlooms to power looms, it is obvious that for the forseeable future there will be a large sector of handweavers, and it is our opinion that proper development of their tools and techniques and products can go far to win a market for them and improve their livelihood.

We now turn to suggestions about specific types of Indian handloom fabrics which, in our judgment, offer the best opportunities for development as exports to the United States.

HANDLOOM COTTONS

Madras, Plaids and Stripes

These, of course, are already well accepted as a definite style in the United States. It might be added here that the same wide fame which this fabric enjoys is certainly possible for other Indian textiles. We noted that many patterns viewed in Madras seemed to have a "Western look" as opposed to the beautiful colourings with which this fabric made it's original impact. Whatever the reason for this, we feel it is a mistaken direction. We are aware that copies have been made in the United States of the "Madras look". However, in our opinion, they do not compare with the original, and there will always be a discriminating audience which can tell the difference. The problem for India is to retain the indigenous colourings and character of Madras yet evolve new variations, such as might be achieved, for example, by multiple, shuttle arrangements. The possibilities of growth are large.

It is suggested that emphasis be given to development of coordinated patterns. This would have special appeal to United States sportswear markets, and many fresh ideas are possible.

Another suggestion, which well could revitalize this whole area, is the development of a fine, sheerer Madras like a sheer muslin or possibly even an organdy effect. Using the typical warmtoned plaids, the lighter, breezier effect will lend itself to many new uses and should be wonderful for summer dresses, both day time and evening. It would also appeal to the men's shirt markets, in which there is a trend towards sheerer fabrics.

Given fresh designing, Madras sales could be accelerated in the following markets :

A. All varieties of women's sportswear
B. Children's wear
C. Rainwear
D. Umbrellas
E. All varieties of men's sportswear
F. Accessories—such as bags and shoes.

Also in Madras we saw attractive irredescent or 'shot-colour' cottons. These were in effective colourings and light weights. They suggested development for the women's and children's markets.

Bordered Cottons—as Seen in West Bengal

These sheer and semi-sheer cottons looked very attractive and suggested many uses in the United States markets with little design change. Their quality at present is not up to American requirements, but if this deficiency is overcome the possibilities for marketing should be excellent. The handsome indigenous border designs appealed especially. Although admittedly, borders have been presented and used in American markets to some extent, we believe these have a character all their own. Perhaps the name "West Bengal Cottons" could be used for marketing and promotion ? The sound of this name is good, and the effort should be made to make it as well known abroad as "Madras".

Suggested areas for use :

A. Women's dresses
B. Women's blouses
C. Women's sportswear
D. Women's negligees
E. Men's shirts
F. Children's wear

Leno Weaves—As seen in Banaras

The many patterns possible in this technique could find a ready market in the United States, with some direction in styling. The potentials of design development are endless, and the skill is certainly there. Leno weaves attractively styled, could interest markets such as:

A. All kinds of women's sportswear
B. Men's shirts

Hyderabad Cottons

These simple tailored designs, crossbar and dotted patterns, looked especially good for the American sportswear markets. We understand that some small yardages have already been exported. This could be accelerated by greater variations and more original colourings within the same theme. Colours seen were rather limited.

Suggested markets :

A. Women's sportswear
B. Men's shirts
C. Children's wear
D. Curtains

Gold Coast Cottons—as Seen in Madras

These rather bold designs, in effective colourings, were very interesting. We were told they are mainly popular in Africa and are not used to any extent in India's home market. They certainly suggest good novelties for United States promotions if discriminatingly edited and quality-developed. Natural uses would be for :

- A. All varieties of women's sportswear
- B. Men's shirts and beachwear
- C. Women's robes
- D. Men's robes

Lunghi Cloth—as Seen in Madras

These short lengths of cotton in which related patterns are combined in the design present many ideas which can be used effective if developed in the longer yardages required for United States export. The suggestion is to develop coordinated companion fabrics. The procedure is common in the United States fabrics field and is a favourite of fashion designers, especially for the sportswear markets. We understand there have been some attempts at this, but apparently with negligible success. There are scores of excellent existing patterns from which to develop a presentation for export. A creative editing effort might bring good results. To be used in markets such as :

- A. All kinds of women's sportswear
- B. Beachwear
- C. Men's shirts
- D. Men's beachwear
- E. Children's wear
- F. Accessories—such as exterior and interior of carry-all bags.

Terry Towellings—as seen in Trivandrum

Many attractive textures were seen here, but it must be said that India will meet with exceedingly strong competition in the United States, once quality is controlled, creative thinking must be devoted to styling. Unique patterns and unusual colour combinations can open the market.

It is also suggested that thought will be given to "shapes" which would be beyond competition. Perhaps a beach "saree" of lovely bordered towelling could be designed to be worn over the bathing suit. Measurements and patterns would, of course, have to be worked out to avoid being cumbersome.

Another idea is a kind of bath "poncho" or robe for bath or beach wear. This garment, simply a large rectangle with a center slit for the head, made in attractive patterns and colours, could be packaged and sold not only through retail stores but for use in hotels and clubs the world over. It could be used by both men and woven. Perhaps a specialist in this field might be invited to advise India's towelling industry on design and marketing problems. The skill is there.

Printed Cottons—as seen from Lucknow

Although prints are surely less costly when done on machine made textiles, the quality and unique character of these handloom fabrics could find an interested United States market. On the whole, we did not view too many exciting prints... Most seemed pedestrian in colour, which is the most important element in print design. We saw museum pieces and "outdated" (as explained to us) designs which offered more appeal. Although we realize that the small paisley designs and that whole family of motifs have had many revivals in fashion markets in Europe and America, we feel that there are many other sources of inspiration which have not really been tapped and which could be a continuing fashion contribution. India's past design and art culture is a vast stockpile of inspiration. Creative research can yield a cache of uncommon designs. There are, of course, endless uses for prints such as :

A. Women's dresses of all kinds
B. Beachwear and sportswear
C. Children's wear
D. Men's shirts

Cottons with inlay Tissue Designs

Some very beautiful examples of this indigenous technique were viewed. Among them we especially admired the sarees with inlay of small geometric patterns, typical of Coimbatore, and those found in Travancore using regional design such as delicate gold borders and inlay arrow—effect designs at edges. These simple but elegant designs in sheer and medium weight cottons suggest fashion uses in the United States quality market such as :

A. Women's summer dresses and evening dresses
B. Women's blouses
C. Negligees
D. Men's shirts

Pre-Dyed Warps

These effects are most indigenous and offer many possibilities for styling. If designed coloured and well, they could be a contribution to United States markets, especially for sportswear. Suggested uses :

A. Women's sportswear of all kinds
B. Men's shirts
C. Possibilities for home furnishings

Resist Printed Cotton Sarees

This indigenous technique printed in traditional designs with gold and silver, could find a select designer audience in the United States. Good quality base fabric and discriminating design and colour should be developed. It would serve the following limited markets :

A. Evening Dresses
B. Dressy Blouses.
C. Scarves and stoles

Tie-and-Dye Cottons

Although a similar effect has long been familiar in the United States, it is not much in fashion demand. However, India has a special skill in this art, research and development in design could well bring it into favour in high fashion if launched by the right designer. Some possible uses :

A. Playclothes
B. Sportswear
C. Robes

HANDLOOM SILKS

Sarees in Classic Length

It is no news that the sarees seen in India are some of the most beautifully designed lengths of silk in existence. They are world famous and justifiably so. They have enjoyed a limited but continuous high fashion audience in the United States. However, the revenue derived from exporting sarees, can only be small, as there are only limited styles possible from these lengths. However, perhaps it is possible to think about new uses and new dimensions for United States markets, not altering the beauty and intricacy of design inherent in the saree.

One approach is to so design the patterns and motifs within the saree, that when portions are cut out and sewn together, the result can be a blouse and skirt, with the borders and patterns falling into the required places. This could especially appeal to the retail fabric departments of stores in the United States whose customer is the home sewer. This idea, attractively packaged, could also be developed to appeal to the tourist trade in India.

Another thought is that perhaps a shorter saree length might appeal to the United States consumer. For instance a 4 yard length of silk is sufficient for many United States styling needs. This would also have the advantage of lower cost.

While in Kancheepuram the team was impressed with the manner of presenting saree patterns in small samples of about 1 yard each. This not only was an obviously sensible way to show the many patterns available, but the short lengths were most attractive with the two ends finished with fringe. The samples as they are could serve well as scarfs, and it is suggested that an attempt be made to merchandise these.

Bordered Saree Silks—in Required Lengths of 40 to 60 Yards.

There are almost endless variations of border designs which are indigenous to the several important areas of India where these are woven, such as Banaras, Bangalore and Kancheepuram. These saree border effects have had some spotlighting in United States markets, but a word of caution is offered here. Great care should be taken that these silks are not cheapened to the point of flooding the market, providing for a short-lived "promotion", then receding to the point of no demand. Constant awareness of quality control, manner of distribution, and ultimate market, in terms of a *strong* long-range growth is urged. This means a wise and well-organized marketing approach, once quality and technical adjustments are made. The obvious outlets for these elegant silks are in the dressier markets. Continued experimentation with fresh colour effects and design combinations, perhaps even new textures after new yarns are perfected, should, if discriminately handled, result in accelerated sales. *Mulberry Silks*—and those using dupione yarn for texture, such as seen in Bangalore.

Many lovely plain silks were viewed in all areas visited. Our repeated comments regarding the necessity for greater attention to quality, design and colour apply to these fabrics. The power loom competition makes it mandatory that creative experimentation be undertaken in order to offer special effects with colour, and should be a strong promotional aid. This cannot be overemphasized.

The soft, supple, lightweight silks, such as those used in scarfs, are appealing. But again, the awareness of power loom competition must be faced. However, if these were embellished with unusual prints or embroidery or bordered in some unique way, United States high fashion acceptance would be likely. A competitive market can only be met by unique styling.

We saw some effective plaid silks, particularly in Bangalore. However, these were obvious copies of those done in Siam, and in our opinion, not as well done. This approach is unnecessary in India with the supply of ideas at hand, and in the long run will be detrimental to her markets. India must develop her own creative energies. Uses in America for interesting silks are endless in both the women's and men's wear markets, as well as home furnishings.

Wild Silks of the Muga and Tussar types

These textured fabrics are well liked by U.S. consumers and have been exploited by quality fashion houses, although the supply is limited. The variations of natural tones are handsome. We saw some attempts at dyeing these fabrics, but the colours were not effective. However, continued experimentarion could probably bring results. Limp, sleezy and too heavy types should be avoided, as well as those starched or sized. Experimentation with gold yarn mixed with the rough, shaggy texture is a suggestion. Perhaps also some new directions could evolve out of experimentations with bordering this fabric. Variations in weight suggest a variety of uses such as :

A. Women's suits and coats
B. Women's sportswear
C. Women's robes
D. Accessories-such as shoes and bags
E. Men's wear
F. Men's robes

Elaborate Silks and Lames

India's talent is unsurpassed in wearing the most elaborate and intricate fantasies fit, indeed, for a Maharajah. However, the U.S. market demand for this type of cloth is infinitesimal. It is hoped, however, that the skill and artistry represented by such creations will be kept alive, if only to serve the small couture groups, with their limited needs. A master weaver of impressive skill, was seen in Banaras. It was explained he was the last with his knowledge of certain intricate techniques. This man should be serving as a teacher to young people, who may, with their "new eyes", contribute creative directions for today's needs.

Organzine and Sheer Silks

Sheer fabrics are well liked in United States markets for dressier and evening wear. We viewed many with lovely delicate border designs of metal or coloured yarn, or inlay tissue motifs. These should find favour in the quality dress houses. Colour is, of course, a major factor in popularity. The blouse market, which has made a "comeback" recently would also be an audience for this type of fabric.

HANDLOOM FABRICS OF OTHER KINDS

Of the handloom fabrics which we saw in India, the cottons and silks were of most possible interest for United States markets, in our opinion. However, this does not mean that others with good market potential are non-existent.

We saw little of the woollens. The few modern Kashmir shawls and fabrics shown us were not of a quality which could compete with other sources at this time.

There were fabrics seen of mixed fibres, such as cotton and silk and other combinations. From a fashion viewpoint these are all certainly acceptable so long as the finished effect is appealing and if they can meet price competition.

Rayon seems a waste of effort for the handweaver. Arab Rumals of silk and rayon in stripe effects were shown, but the styling was poor and the power loom competition is obvious. The Lashingphi quilt technique (a soft heavy corded effect woven by inserting cotton silvers) was interesting and perhaps could be offered for home furnishings uses, also suggested possibilities for beach robes.

We saw many Punjab Khes covers (bedcovers) which were very inexpensive and suggested furnishings for young people' rooms and casual country living uses in the United States. Sizes were incorrect for standard U.S. beds. A.U.S. consultant and stylist in this field would be of value if this type of product is to be developed for export.

Tapes and webbings were seen, and though in many cases they were attractive, suggesting belt and accessory uses, only those which used handweaving techniques and designs of unusual character could meet competition from the machine - made varieties available in the United States. The same applies to ribbons. All the wonderful border designs seen on fabrics should perhaps somehow be utilized to develop a quite individual ribbon, and this would be a contribution to fashion needs.

Embroidered handloomed fabrics have possibilities for development. We viewed very attractive examples of these in silk saree lengths. Perhaps design experimentation could be done on textured backgrounds, too, such as wilk Tussar silk.

IDEAS FOR ARTICLES USING HANDLOOM FABRICS— FOR EXPORT AND FOR TOURIST TRADE

To employ the wonderfully talented fingers of India many accessories could be designed which would have appeal not only in the United States market but also in the sure-to-grow tourist trade. With a little redesigning and attention to quality, many articles now being made could develop into a greater volume of sales and thus put many more hands to work. Following are a few suggestions which may focus attention on possibilities.

In all these suggestions it is recommended that an expert in the specialized product (for example, bags, slippers, handkerchiefs) be brought to India for a period of time to advise on styling and marketing and to demonstrate new directions. We are prepared to suggest suitable persons who might be invited.

Umbrellas

One notices the ubiquitous black umbrella as almost standard equipment in India, used for both rain and shine. Why not colour ?

Gay Madras plaid, sun-drenched solid colours, elegant silks with borders—all these fabrics could be utilized after water-proofing. Think how attractive on a monsoon day – and no less practical on a sunny one !

It is said that black is cooler. Probably, on investigation, the difference in coolness between a circle of black material and a coloured one would turn out to be negligible, for this use.

Umbrella handles could also be developed utilizing certain crafts—wood carving, ivory, brass and perhaps even bidri work, if the weight could be controlled.

Slippers

American women delight in owning a wardrobe of gay leisure slippers. Many ideas could be developed in this area utilizing handloom fabrics and handwork. The beautiful, elaborate saree border designs lend themselves to this use. Sizes and shapes, however, must be patterned to the American foot. More suppleness is also suggested for American use.

Bags

Existing styles, although often with skilful embroidery, are usually outdated in style and poor in workmanship. A great design job could be done here, as there is little variety at present in this field. New combinations of textures are suggested, such as gold embroidery on rough wild silks. Also there could be more supple construction and attention to shapes, linings and fastenings. Most workmanship of present compares poorly with similar articles in other markets. More variety in types of embroidery is also advised. A revitalized market could result from restyling. The Bihar type of bag should be developed by giving thought to sizes, colour and design. These are good tourist items, but present styles could be greatly improved.

Scarfs

Although United States markets are saturated with scarfs, new designs in colour and shapes will always find a place. Why not develop some new shapes—such as the triangle ? In the south, the man's pleated cotton scarf, called *Angavastram*, was noted, and it is suggested that this would be marketable for the women's accessory field. Attractively packaged, it should be brought to the attention of some pace-setting retail store for introduction.

Pillow-covers

Americans like pillows. Why not develop attractive pillow squares utilizing many of the weaving techniques? Also hand-blocked patterns on cottons, such as those seen in Calcutta.

Handkerchiefs

There are certainly possibilities of developing handkerchief production in India with an eye toward United States export, but some really imaginative design and creative business initiative must be put in motion.

Many techniques which we saw would lend themselves to this endeavour, once standards are established. Although handkerchiefs in the United States for both women and men are most popular when made of linen, it is believed that with unusual design and competitive pricing cotton could earn its place.

Although the Madras handkerchief (this term is used here in the American sense) is seen to some extent in United States stores, its place is a poor one. Those we viewed while visiting Madras had many drawbacks for United States consumption. The quality of cotton and use of starch is unacceptable in United States markets. The hems are poorly made ; these must be hand finished to be acceptable. Sizes are not in accord with standard United States measurements. However, there are many attractive available plaids, stripes and checks with which to evolve styles. Guidance here is essential. The accent must be on eye appeal, once the quality problem is conquered.

The finest handkerchiefs we saw were being sold by some nuns in Madras. They import the cotton or linen and teach women the art of fine handkerchief making, to which India's fingers are certainly suited.

The charming border designs of the West Bengal cottons suggest adaptation to handkerchief ideas. Also interesting were the fine grosgrain-effect borders seen at the end of some types of dhoti. The inlay arrow-effect designs we noticed in Travancore were particularly elegant. The tissue inlay motifs as seen at several production centres would seem to suggest an indigenous kind of design for handkerchiefs.

The two-tone iridescent semi-sheer cottons seen in Madras were appealing in their colouring—perhaps these could be adapted for handkerchief uses.

Printed handkerchiefs, although very common in the United States, and usually done on linen, could be a fashion contribution if designed with imagination. Some of the printed cottons from Lucknow suggest this.

Ikat and tie-and-dye techniques might with a fresh approach, create a whole new look for handkerchiefs.

Hand-rolled hems should be no problem for India's fingers, in view of the many intricate chikan embroideries which we saw. The patience and skill with which these embroideries are made should be enlisted to make the finest quality, most beautiful luxury handkerchiefs in the world. Unfortunately, those we saw were on extremely poor starched cottons. It seems a shame to put such effort and skill onto such inferior fabrics.

Perhaps the handkerchief could be used as a promotion or publicity aid in India? In every tourist hotel room, for each guest, an attractive "India" handkerchief might be placed. If printed, perhaps a message could be conveyed, such as some fact relating to that area or an Indian proverb or verse or simply "Welcome." Handkerchiefs could also serve as souvenirs on planes. It might become a fad to collect handkerchiefs from India ! And it certainly would prove a useful sample of India's own handweaving talents to foreign visitors. Why not sponsor a competition for ideas and designs in this field ?

Men's ties

Research on styles popular in the United States should stimulate some creative development here. Good designs will be sure to find a welcome in United States markets. Ties are also excellent gift items for the tourist trade.

Embroideries

The skilfully made embroideries of India could enjoy greater popularity and usefulness than they do at present. A revaluation of current designs and their validity for today's needs seems necessary. A case in point is the embroideries which are used in regional shirts, table, covers, saree and handkerchiefs. First, the existing sizes and shapes are likely to be of negligible use in Western markets. The accepted measurements for export should be studied. Second, the base fabric, usually a sheer or semi-sheer cotton, is of inferior quality and finish. The fabric should be permanent in finish and preshrunk.

This needlework skill could be put to use in the following ways to find a place in United States markets :

a. *Shirts*—for men, women and children. This is a great possibility, but good design will be essential.
b. *Petticoats and Sleep wear.*—Entire patterns could be worked out as finished garments, or borders and motifs could be sold separately as trimming.
c. *Children's and baby dresses.*—These embroideries should be a natural for this market.
d. *Curtains.*—Wonderful possibilities exist for the embroidered work on cafe or full-length curtains. Sizes must be studied for United States use.

Banjara, Mica or Mirror Work Embroidery

Styling, attention to quality of base fabrics and thread, along with discriminating could well revitalize this indigenous skill and bring it into fashion. It has many possibilities such as :

a. *Bags.* More interesting shapes and sizes should be developed especially in the carry-all variety. These would be for the tourist trade.
b. *Belts.* Correct sizing and unusual fastings could interest the United State market.
c. *Slippers.* These could be popular for at-home wear in the United States if made to American tastes.
d. *Hats.* Attractive small packable be designed.

Kharri Work (or gum printing) on sheer cotton.

This technique is attractive. and good styling of prints could possibly bring it into fashion focus. Classic small Person motifs, such as those seen in museums, might be used.

Saree borders. These, or loom embroidered bandings, could possibly be developed for blanket bindings by a style-conscious blanket manufacturer.

Tassels. The art of tassel making could perhaps be useful in both the fashion and home furnishings market.

ON COLOUR AND TEXTURE

The first impression one receives of India is colour. The emotional impact of this is overwhelming and, to the artist, most stimulating. To the fashion-eye, however, searching the fabric emporia for colour and patterns to carry to United States markets, it soon is evident that the colour range available for purchase is relatively limited and quite standardized in every shop. This is puzzling. On study, one realizes that the melange of colour in the crowd—worn, washed, dried by the sun, softened by age has achieved a beauty not available in new merchandise on fabric shelves. These softened shades, accented with brilliant staccato colours, and the accidental juxtaposition of these in the crowds, creates an exciting palette found no other place in the world.

We suggest that some enlargement of the colour range available to the buyer of fabrics for export would be advisable. The inspiration could well be drawn from India's own vast kaleidoscopic throngs. There is no reason why modern dyes while offering essential qualities like fastness to sun and to washing—cannot duplicate the sun-warmed, rain-washed earth-worn colours which are very much a part of India's great beauty.

In America, especially, much of the fashion industry is vitalized seasonally by changes in colour selections. This means a wide variety offered by the fabric houses. There are endless nuances to colour—endless possibilities for combination—endless moods to be conjured. It is a fascinating study in itself. Our suggestion is that research, experimentation and a creative attitude toward this problem would benefit India's handloom industry and bring a fresh lift to classic patterns.

A major project for development should be a folio of some 200 or 300 colours formulae with which the weaver could "play". These, with descriptive or regional names and an imaginative presentation, would be a great stimulus to the creative processes of designing.

India is colour. But there is less variety of colour in the fabrics available for export at present than need be. It is now only available on an artist's brush and in the look of the land.

With the advancement of technical research, and with development of new fibres and yarns and tools, will emerge a new concept of texture. Most of India's best present fabrics are flat. Texture interest will create new dimensions which will enrich the current scene. It will affect colour and pattern and contribute to creative growth.

A caution should be expressed here, however, Textile producers in other countries, long more texture conscious, have already developed beautiful and accepted fabrics with surface interest. India must develop her own concept of texture that will not be directly like theirs but distinctively India's and this will be "above competition" and an added contribution to world markets. It can be done. This takes study, a willingness to learn from the past, to experiment today, and to look forward to the future. A "fresh eye" with this approach will find rewards not only commercially but in emotional satisfactions.

CHAPTER 3

OBSERVATIONS ON PRESENT TECHNIQUES AND MATERIALS IN INDIA'S HANDLOOM INDUSTRY

The potential exists for greatly expanded sales of some types of India's handloom fabrics in the United States. We have tried to indicate in the preceding chapter which types offer greatest promise for successful marketing and how an imaginative programme of designing and styling geared to the American pattern of clothing and home furnishings, could increase the appeal of these fabrics to the American consumer.

But this potential can be made a reality only on certain conditions. The most important is that India's handloom industry must produce fabrics not only of outstanding beauty—which it knows how to do already—but these fabrics must meet the technical requirements and the quality standards of that segment of the American market which is their natural audience. As we have repeatedly stressed, this is a "quality" market accustomed to technical perfection. It will not purchase, at least not for long and in large volume, from sources which do not consistently meet its technical requirements and quality standards. This is only partly a matter of proper lengths and widths and proper packing for shipment. More fundamentally, it is a matter of proper yarns, proper dyes, consistently good techniques of dyeing and weaving and a rigorous system of testing and inspection to maintain quality at every step in production.

Therefore, a major concern of the team on its tour of handloom centres was to discover to what extent it may be possible for the Indian handloom industry to meet these requirements of the American market with present equipment, materials and techniques and to what extent changes may be necessary. We present our tour observations below, interspersed with comments and suggestions which we hope may be helpful. Then in Chapter 4 we recommend a coordinated plan for development of handloom fabric exports to America in which major emphasis is placed on measures to bring about the necessary technical improvements in production.

The observations below do not constitute a complete record of our visits. They are selected to bring out points that, in our judgment, have an important bearing on the achievement of production standards which are necessary for successful export to America. A detailed itinerary, listing the places and establishments visited by the team, appears in Appendix A.

OBSERVATIONS IN BOMBAY

We visited a cooperative model weaving factory in Bombay. Here we saw an example of a frame loom which can take up to 16 shafts with 12 foot treadles. We were told that there are 20,000 looms of this type throughout India. These looms are constructed in such a way that heavy weights of cloth can be woven. They are capable of making bedspreads, drapery and upholstery fabrics which would be particularly good for the home furnishings industry in the United States. Fabrics can be woven in widths between 54" and 108". It would be helpful in the development of an export programme to compile exact figures on the number of looms available and the width capacity of each.

These looms could also be used to weave scarfs, with Leno selvedges on each scarf. With this type of Leno attachment, many scarfs could be woven at one time.

At present the raw material used in this particular model weaving factory is mostly cotton. However, the type of cotton in use will not find a market in the United States because of its poor quality. Also, the dye vats that we found are of the old type, fired with wood, which means that it is very difficult to control temperature properly. Exact temperature control is essential for quality dyeing.

In our visits to small cooperative weaving factories, we also found cloth being woven of very poor cotton. We were told that the reasons for this are : (1) price, (2) this is the only cotton which weavers can get from composite mills.

During our stay in Bombay we visited the Technological Laboratory of the Indian Central Cotton Committee and had discussions with Mr. Harirao Navkal, Senior Research Officer. Mr. Navkal's knowledge of cotton should be of very great help in recommending the best blends of quality cotton that could be spun in India, particularly of Indian cotton, and the types of cotton which would be best for combing, mercerizing and gassing. Indian cottons in heavier counts up to 60s would be particularly good for the export of home furnishing handwoven fabrics.

We visited several emporia in the Bombay area and viewed some of the best selections of handwoven fabrics in India.

OBSERVATIONS IN BANARAS

We visited the Government Central Weaving Institute in Banaras, where we had many discussions with Mr. J.C. Seth. We found Mr. Seth's knowledge of the handloom industry and his achievements in devloping many types of looms and loom attachments to be outstanding. Discussions with him were most enlightening regarding the possibilities of handloom fabrics export to the United States.

This Institute has made changes in the average Banaras pit loom which enable a weaver to 40 yard length in one piece. It is suggested that the organizations manufacturing loom attachments for the handloom industry visit the Central Weaving Institute in Banaras to observe this and many other developments.

This Institute has also developed many interesting patterns and weaves for the simplest types of looms, such as pit looms with 4 shaft and 6 treadles. We believe that many of the types of improved looms necessary for weaving export fabrics can be found here. The improved pit loom developed at the Institute has (a) tension controls, (b) take-up device, (c) pick wheel, (d) new location for the take-up roll and (e) let-off device attached to beam. Other types of looms which have been developed in the Institute are :

(1) Semi-automatic loom
(2) Dobby Leno loom
(3) Jacquard Leno loom
(4) Overhead Dobby frame loom
(5) Webbing loom
(6) Positive shed Dobby loom with double box attachment
(7) Leno gauze loom
(8) Cross border Jacquard loom
(9) Double shaft Jacquard loom

The loom with Jacquard harness, which in the past needed three men to operate, is now being operated by one weaver.

The Central Weaving Institute has several men who are able to plan and supervise the manufacture of these various improved types of looms. It is important to note that these looms can be made entirely from materials obtainable in India.

We understand that there is no programme for training men in the manufacture and maintenance of textile machinery and equipment. We feel that it is very important for such a training programme to be established. If the implements for improvement of the handloom are to be introduced on a large scale, there will be a great need for personnel trained in their production and servicing manufacture.

We had discussions with representatives of the weaving trade from the Banaras Chamber, which has approximately 200 members. The members of this Chamber are entitled to use the quality marking scheme of the Government of U.P. We were told that every sample is taken to the quality marking office and tested for colour fastness, uniformity, etc. A 'Q' mark is then stamped into the fabric. It is our opinion that the standard of quality which 'Q' represents is not reliable and does not adequately meet the standards set up by the Indian Standards Institution. The reason for this conclusion is that the methods for dyeing observed in Banaras are inadequate, the dyes used are not scientifically formulated and the method of testing is not of the standard found necessary by the textile industries of other countries.

Banaras has approximately 30,000 pit looms. These looms can weave cloth up to 45" wide. They should become a great source of silk saree type of yard goods for export to the United States. Also, efforts should be devoted to introducing other types of raw materials and combinations of raw materials such as quality cottons combined with silk.

In Banaras we found that the raw silk is imported by the Central Silk Board. The yarn is then sent by the handloom weaver to throwsters for throwing. We were told that often the same quality of yarn which the weaver gives for throwing is not returned to him. It is recommended that a silk testing bureau be set up in the Banaras area.

The Department of Industries, Government of U.P., accepts orders on behalf of cooperative weavers. The private and master weavers accept orders individually and directly. We found the relations between cooperative and private weavers to be rather strained. We hope that our recommendations in Chapter 4 regarding joint use of Export Processing Centres by cooperative and private weavers can be carried out and will lead to improved relationships among all handloom weavers.

We visited a typical Government dyehouse in Banaras at Pilli Kothi. This dyehouse has standardized 35 colours for the Banaras weaving industry. Attempts are being made to test these colours for wash-fastness, crocking and so forth, but the equipment for this purpose is totally inadequate. Also, the equipment and methods being used for dyeing in this typical existing dyehouse is, in our estimation, inadequate for use in dyeing yarns to be woven into fabrics for export to the United States. Also, the size of the dyehouse is inadequate in terms of ability to supply the large number of weavers located in the area around Banaras.

The warping methods used by the weavers of Banaras are, in our estimation, inadequate for several reasons. One is that the warping is done outside with no protection from the elements. Warps often become soiled.

OBSERVATIONS IN BHAGALPUR

The silk expert of the team visited Bhagalpur, one of the main silk weaving centres in India, on the 5th November, 1956. In Bhagalpur City and the immediate vicinity there are about 10,000 handlooms producing shirting, suiting, sarees, scarfs, mufflers, bedspreads and furnishing fabrics. Most of these articles are made from Tussar silk. It was also learned that within the State of Bihar the handloom industry (cotton) has about 200,000 families dependent upon it.

The T.N.J. College was visited, where there was an exhibition of fabrics made in the Bhagalpur area. There were many silk fabrics of all types made from reeled yarn, reeled Tussar and mulberry silk for which the area is famous. Also there were Purdha pattern dress materials made of cotton. At the Nathnagar Government Silk Institute, an inspection of different departments of the Institute was made, and the actual silk worms were seen in the different stages of their growth. The reeling equipment was inspected, where the method of reeling both mulberry and Tussar silks was seen. Pit looms, frame looms and Tussar machines were in use in this Institute. Also seen were many students undergoing training in the different phases of manufacturing silk or Tussar silk products.

Next a visit was made to the Narga Noor Weavers' Cooperative Society, Nathnagar, where again some of the usual technical problems of producing fabrics for export were encountered, such as non-standardized loom widths and the fact that the fabrics are made only in short lengths. Fabrics woven on these looms included the following made from Tussar yarn and raw silk mixtures :

Chaddar, coating, shirting, furnishing fabrics, scarfs, Matka cloth and Bafta. Nathnagar Weaver's Cooperative Society Ltd., Bhagalpur, was also visited, where it was found that the Tussar fabrics being woven are very similar to those already seen. In conferences with members of the society it was learned that the Tussar weavers in the Bhagalpur area have been very greatly affected by the restriction the United States Government has placed on the importation into the United States of Tussar fabrics, or products, due to some doubt as to the place of origin of the Tussar silk. As about 50,000 people are affected in this area by this restriction, all Bhagalpur officials with whom discussions were held requested that the team do everything in their power to clarify the origin of the India Tussar silk to the United States Government so that the restriction will be lifted and export of Tussar fabrics to the U.S.A. from India may be resumed.

OBSERVATIONS IN CALCUTTA

The team visited many emporia and private weavers and then met with the Central Marketing Society of West Bengal. We discussed both cotton and silk saree material which is woven on both pit and frame looms. The home furnishings fabrics that are woven in West Bengal are from 54″ to 108″ wide. At present both pit looms and frame looms can weave only up to a maximum length of 20 to 25 yards, which means that loom changes will be necessary in order to weave longer pieces (50 yards) for export to the U.S.

There are about 800 semi-automatic looms weaving now, and the Government has sanctioned another 100 semi-automatic looms under the Second Five Year Plan. There is a programme for introducing more semi-automatic looms to the extent of 500 looms in 5 years.

These semi-automatic looms can weave approximately 40 yard pieces in 52" widths. We suggest that West Bengal attempt to weave spun silk on these semi-automatic looms, because there is a good market for this type of fabric in both the fashion industry and the home furnishings industry in the United States.

The fabrics woven in West Bengal are particularly unusual because of the spun silk and pure silk. Combinations could also be developed, such as mercerized cotton in the warp with spun silk filling or pure silk in the warp with quality cotton filling. Many other variations of the raw material could usefully be developed. At present West Bengal has not been using any combed, mercerized and gassed cotton. We recommend that the combed and mercerized cotton in both single and 2-ply yarn be used for warp.

The saree constructions which we found in West Bengal are fine counts using 120s cotton 100 per inch in the warp and 120 picks per inch in the filling of 100s cotton. This type of construction using mercerized cotton with tissue inlaid design motif would be a very good type of fabric for export to the United States.

West Bengal weaves very fine cotton counts, down to the heaviest which is 26s 40 per inch of 24s in the filling 44 picks per inch. This is used mainly for the home furnishing trade.

We found the same problem in West Bengal that we found throughout India in the handloom industry—the use of inferior cotton. Here, as elsewhere, yarn purchased from composite mills is inferior in quality and there are difficulties in obtaining better qualities of combed cotton. The need to produce at very low cost for the domestic market also leads to use of inferior yarn.

At present, the dyeing is done in private dyehouses. One of the reasons for this is that the cooperative dyehouses have difficulty in getting the necessary export help because of the lack of adequate remuneration or profit. In our many discussions, it was agreed generally that the method of cheese dyeing would be particularly good for dyeing cotton in West Bengal.

The Tussar silks which are found in Bengal are excellent fabrics for the fashion and home furnishings industries. Out of the total looms in West Bengal, there are 3,000 silk looms which could be converted to weave up to 50" wide cloth. At present they produce 16 yard pieces. With the proper take-up motion attachment, they would be able to produce 40 yard pieces. There are several districts which are occupied in weaving West Bengal silk such as : Bankura, Berhampore, Murshidabad and Malda.

Most of the heavier spun silks made in West Bengal are woven 28" widths. We were assured that it would be possible to make the necessary loom changes to weave 50" wide cloth of the heavier spun silk type. Most of the spun silks used in West Bengal are spun on a spinning wheel which was recently improvised by Mr. Sen. It is an adaptation of the Swedish spinning wheel for wool. It was stated that already 1500 of these wheels have been introduced into refugee colonies and camps, and that there is a programme for introducing 5,000 more wheels. This will expand yarn production and thereby increase the ability to produce for export. It was estimated that West Bengal could produce approximately 200,000 yards per year of its typical spun silk fabrics for export to the United States. We believe that this amount could readily be marketed in the U.S. if it were of proper quality.

It was the feeling of Mr. Mittra, Secretary to the Government of West Bengal, Department of Commerce, Industries and Cooperation, and of Mr. Mallick, Director of Industries, that West Bengal could manufacture to quality standards and specifications for export to the United States, if the proposed Export Processing Centres were set up.

OBSERVATIONS IN HYDERABAD

Hyderabad produces hand-woven cottons and silks on both pit and frame looms. We were told that there are approximately 150,000 looms which come under the Hyderabad Apex Society. All of these are fly shuttles. Approximately five percent of the total are frame looms. The width of the fabrics produced runs from 30" to 50". Most of the fabrics are woven with cotton from 10s to 40s. In very special cases the weavers use 60s and 80s. 10s to 40s cotton is indigenous and 60s to 80s is made up of imported yarn.

The fabrics woven in Hyderabad have not made use of quality cotton mainly because it has been very difficult to get this type of yarn. It is our understanding that the State has just set up a spinning mill which will come under the Cooperative Society. At present the yarns used in Hyderabad come from composite mills, as we have also discovered in other regions, supply only their poorer yarns to the handloom weaver. Good quality cloth cannot be produced with poor yarns.

In discussing technical improvements of looms with various technical men it occurred to the team that it would be important to have semi-annual technical conferences of the leading technical men in the handwoven industry. In such conferences they could exchange ideas about various loom improvements that are being worked on separately in different states. A great deal of waste and time would be saved in such discussions.

Hyderabad uses many private dyehouses for the processing of yarns. The Cooperative Society has also recently started a dyehouse. We were disappointed to find that it is of the traditional type, the vats being heated directly from a wood fire. This cannot possibly give proper temperature control. We urge that in all future installations provision be made for heating with steam.

We visited a training institution in which weaving, dyeing and printing are taught. This institution has a dyeing master, but does not have a chemist who possesses knowledge of the dyeing industry. The students receive what is known as practical training, but it would be better if they were also given some understanding of the scientific principles at the basis of their work.

We were informed in Hyderabad that there are not sufficient loom mechanics. Again this points out the necessity for establishing a training centre for instructing men in the manufacturing and maintenance of textile machinery and equipment.

The silk cloth woven in Hyderabad consists of 20s-20s 4s fold silk tram. The Hyderabad weaver would be able to weave with spun silk, but at present the price is too high for domestic consumption. Hyderabad also weaves a combination of silk and cotton in a saree type of material. It is our opinion that if 20-22s silks were used in the warp with combed and mercerized cotton in the filling this type of material could be exported to the United States.

An interesting material which is woven in Hyderabad has a tissue inlay coloured spot effect woven into the fabric. This again is a type of fabric which would have appeal and would meet little or no competition in the United States. The heavier type of cotton bed sheets which we saw in Hyderabad would be very useful in the United States home furnishings trade. This type of heavy cotton could be woven up to 54″ widths. Hyderabad also weaves bedsheets 90″×180″ which could be developed using better quality yarns, and new colours and weaves.

Hyderabad fabrics seem to have a design and quality of their own, and we feel that it will be well worthwhile for the Design Centre to help develop new variations on Hyderabad traditional designs. Embroidery with mirrors on handwoven fabrics, for which India as a whole is known, is also done in Hyderabad. This could find many uses in the United States, and this type of fabric should repay development efforts.

In Hyderabad we found a central weaving centre which has 10 pedal looms, 30 fly shuttle pit looms, 10 frame looms and 2 Henru looms. Here the weaver comes and works with his family and children, who do the winding of filling yarn. There is a good atmosphere because of the families working together, all participating in the various aspects of the handwvoen industry. Every aspect of weaving is done here, including dyeing the yarn, making the warps and weaving the fabric. It is our opinion that this type of weaving centre would be particularly good if outfitted with the latest type of improved handloom equipment and proper dyeing equipment for use in producing fabrics for export.

It was interesting to observe here that a young boy was weaving on the same loom that his father had used, but he was using a fly shuttle where his father had used a throw shuttle. This type of development from one generation to another, and even more rapid improvement, is what India can look forward to as steps are taken to introduce available technical improvements in all phases of the handloom industry. The weavers that work in this weaving centre also have looms in their own homes. After the weaver spends eight hours working in the weaving centre he is able to continue weaving in his own home if he so desires. Often when he is working in the weaving centre members of his family weave on the loom at home.

The weavers at this centre come from within a radius of 5 miles of the city. One of the problems involved is the fact that they walk to work. The advantage of this type of centre is mainly that the weavers are assured of regular supplies of yarns and other needs. The weavers are also assured of reasonable wages, and they work under supervision to attain quality control. We were impressed with the possibilities of this type of weaving centre. Perhaps a school could be established for children of the weavers that come to work in the centre.

One of the highlights of our stay in Hyderabad was a visit to the Government Village Industries Training Centre. The particular type of building at this Centre, which was constructed of steel and glass, would, in our estimation, be very suitable for the proposed Export Processing Centres. It is spacious, and it offers the proper kind of natural light necessary for dyeing, winding and warping. We suggest that a set of plans of this building be obtained for purposes of studying costs and other factors related to its adaptability for the Export Processing Centres. At this training centre we noticed, for the first time on our tour, dye vats which are controlled by steam. Vats of this type are necessary for the proposed Export Processing Centres.

OBSERVATIONS IN BANGALORE

We were informed that in Mysore State there are approximately 3000 looms weaving wool, 4000 weaving silk, and 300 weaving cotton. Most of them are pit looms. In the production centre run by the Department of Industries we observed many types of handlooms, including a frame loom with 6 shafts and 8 treadles built in this centre. We also saw overhead Dobby arrangements and various other Dobby looms similar to looms which we saw in the Central Weaving Institute at Banaras.

Bangalore weavers buy their cotton yarn from composite mills. Again we observed that the yarn so obtained is of very poor quality. The designs and colours of the cotton fabrics seen in Bangalore were excellent, but because of the poor materials used in them they have little value at present for export to the United States.

The silks of Bangalore are world famous. We visited both private and cooperative weavers, where we saw Bangalore silks being woven with contrasting coloured borders and tissue inlays in the body of the silk fabric. We also saw the most intricate way of weaving chiffon silk with tissue inlay designs of gold. These Bangalore silks, in our opinion, would be excellent for the United States fashion and home furnishings trade.

The principal technical problems relate to the length of fabric that can be woven and to the processes used for dyeing the silk yarn. All of the weavers that we talked to express the desire to change over to looms capable of weaving the larger size piece-goods which the American market wants. According to an estimate given us, it would take six months to rebuild 500 looms with take-up motion, pick wheels, warp beams, and relocation of take-up rollers so that the looms could weave cloth up to 50" wide in pieces as long as 50 yards. This would make possible a substantial production for export.

The dyeing problem in Bangalore is the same that we observed in the rest of India. Acid colours are used for their silks, which makes it necessary to have able dyers in order to achieve the standard required in silk dyeing. There are no facilities in Bangalore to test the completed products. At present some silks are being produced for export. However, these silks are not fast to light nor are they entirely fast to crocking and perspiration.

The word "guarantee" is used very often in Bangalore with reference to silks. It might be pointed out that in the United States and in the world textile market it is recognized that it is impossible to stand behind the word "guaranteed." The reasons are, first, that the dyestuff manufacturer does not guarantee his dyes, and second, that there has never been a colour developed that does not change either because of time, sun or climatic conditions. A better expression is "quality control" which means using the best type of dyes available, processing them by the latest technical methods and testing frequently. This is the best that can be expected of technicians of our time.

We were informed that all the weaving in Bangalore is decentralized and done in the homes of the individual weavers. We were also informed that Bangalore does not need Jacquard looms. It is our opinion that if Bangalore silks are to be developed for export, pressure harness attachments will have to be applied to the present pit looms so that they will be able to weave tissue isolated motifs. This type of fabric will find a large market in the United States, and it will not be possible to duplicate it on power looms.

We saw solid-colour plain-weave silk fabrics and striped plain-weave silk fabrics in Bangalore. In our opinion, it will be very difficult to compete in world silk markets with these fabrics, because this type of silk can be woven and is being woven on power looms throughout the world at a lower cost in labour.

We noted also in Bangalore that fabrics were being developed along the lines of Siamese silk. This, in our estimation, is a mistake, because Siam has had only the most elementary type of weaving, while Indian hand weavers have the heritage and ability to do more intricate work. Indian weavers should maintain their rightful position as the greater masters of the art of hand weaving.

The type of border design that we found in Bangalore differs from the Banaras type in that the Banaras borders are made with filling effects and the Bangalore borders are made with warp effects.

It is our opinion that with the help of additional loom improvements such as Dobby, Jacquards and pressure harnesses Bangalore would be able to weave silks with a large export potential. To do so would take advantage of a natural opportunity resulting from Bangalore's nearness to the principal silk producing area of India.

We visited ribbon factories in which there are approximately 600 ribbon looms. These looms come under the heading of "handloom" solely because each loom is operated by a man turning a biycle wheel. No weaving skill is involved. If the bicycle wheels were replaced by quarter horse power motors, the looms would operate with greater efficiency and weave the same end product.

One of the highlights of our tour in India was a visit to the Bangalore Technological Institute. It covers every phase of textiles. The Principal, Mr. Nagabhushana, showed us each department. This institute, in our estimation, compares favourably with many of the good textile technological institutes of the world. The departments on loom improvements, spinning, dyeing and weaving are very complete. The laboratory and testing facilities are of a very high standard.

We thought that Mr. Nagabhushana's knowledge of the handloom textile industry of India was very broad, and it is recommended that men like him be called in as advisers on many problems of the industry.

Mr. Nagabhushana pointed out that finished silks woven in Bangalore, or anywhere else for that matter, should be tested for residual acidity and alkalinity. The reason is that, even with several washings, it is difficult to get harmful chemicals out of the fabric, and over a period of time the chemicals eat into silk and slowly damage the finished fabric. We were also interested to note Mr. Nagabhushana's agreement with the view of the team that the nomenclature of rayon fabrics as used in India is not correct. In India rayon is called "art silk." This is confusing to consumers. Since rayon is in no way connected with silk it should not be called by that name.

We were informed that other institutes of the caliber of the Bangalore Technological Institute would be found at V.J.T. Institute Bombay, at A.C. college of Technology, Madras, at Delhi Polytechnic, Delhi and at the Technological Institute of Textiles, Bhawani. It is institution of this type that should be able to develop the technical personnel needed to raise the standards of the handwoven industry. If they could educate more students at a faster rate, perhaps by adding night-school classes, they would accelerate the progress of the industry.

We visited the Mysore spun silk mills in Channapatna. Ten percent of the share of this mill are held by the Government of Mysore and ninety percent by the public. In our estimation, this mill is of the highest standard. It can produce substantial quantities of spun and Noil silk from mulberry. This mill spins Muga and Tussar silk. We were told that much of the Noil, Muga and Tussar silk production now goes to Bhagalpur. In our judgment, more of it could well be used in the Bangalore area. We understand that production has not been expanded in this mill, mainly because the price of the finished silk fabrics is too expensive for wide consumption in India. However, silks woven from the types of yarn produced here should have a considerable market in the United States.

OBSERVATIONS IN THE TRIVANDRUM AREA

On our visit to Balaramapura Weavers' Production and Sales Cooperative Society* 1469 we saw beautiful fabrics made of combed cotton yarn in 100 count. These cotton fabrics are further enhanced with threads of silver and gold plated yarns. They are sold at 45" widths for approximately 10 rupees per yard. Members of this Cooperative are also weaving interesting designs in cotton and plated silver which sell for 5 rupees per yard.

The combed cotton yarns used by this society are of good quality. It is interesting to know that they are woven in 58" widths for cotton sheeting. In this case 60s cotton count is used in 80x80 construction. The selling price of the cotton sheeting is 1 rupee 13 annas per yard. In discussion with weavers of this society the team was told that an isolated motif may be made into cotton sheeting of this quality and that the selling price would then be approximately two rupees per yard. The quality and price of this type of sheeting material would be of great interest to the United States consumer. We were informed that this society can produce approximately 3000 yards of this sheeting material per day, and after discussion it was concluded that they would be able to supply approximately 500 yards per day for the export market.

However, at present the society weaves the sheeting only in 12 yard lengths, which is not suitable for the American market. If exports are to be undertaken to the United States it will be necessary to make loom changes in order to weave 50 yard pieces. In discussions with Mr. R.V. Nayer it was noted that it would be of great benefit to this village if a representative could be sent to Banaras to observe the take-up rollers and other important loom changes which Mr. Seth of the Central Weaving Institute has developed using an original pit loom like those seen here.

We visited the privately-owned weaving factory of Messrs. K.M.S.P. Ganapathy and Sons, which has 99 frame looms with a total production of 2000 yards per day. They manufacture Turkish towelling in multi-colour effects. A 30"x60" toweling sells for 3 rupees 5 annas. This towelling is woven with approximately 12 colours. The team was told that these towellings can be manufactured in heavier size cotton with almost any type of stripes or squares. The towelling have finished ends, and we believe that an interesting fringe effect could be created at both ends of the towel and then hand-knotted. There are 20 looms available to weave the above described towels at the rate of 12 yards per loom per day. The cotton yarn used in this mill is 2/20 and 10s. Unfortunately we found that the cotton is of very poor quality. It is not combed. Miss Cashin, a member of the team, sketched out an idea for a poncho type of towel with a slit in the middle for the head of the wearer; such a development might be one means of building up large sales for this type of material in the United States. The poncho should be approximately 88" long and 29" wide.

We visited Vijayamohini Mills, a private spinning mill which spins only carded cotton. It has 9360 spindles and produces 5600 pounds of yarn per day. Approximately equal quantities of 20s and 40s are produced. In a discussion held with Mr. Nair and Mr. Reddy, we were informed that it would be possible for this mill to comb the cotton and mercerize and gas it for approximately one anna per pound, if there were great enough demand for such yarn. At present the mill is running three shifts. They could double their production of yarn for handloom weavers if they could get the additional allotment of spindles which they have requested from the Government. We understand that the Government of India's standard for an economical minimum production is 18,000 spindles, and at present this mill is running at an uneconomical level of approximately half that standard. The handloom industry would be benefited if the mill were encouraged to go in for better quality cotton yarn and to build up to a production of 18,000 spindles. Mr. Nair said his firm is prepared to invest in the necessary machinery for making better quality yarn provided that they are assured of a guaranteed demand for the production for a period of twelve months. They can make as high as 2/60 cotton. It is our feeling that a 2/60 combed, gassed and mercerized cotton would be a suitable quality for handwoven fabric to be exported to the United States.

We were informed that there are also many spinning mills in the Coimbatore area similar to the above spinning mill and that they spin mainly for the handloom industry. Some of the cooperative society leaders whom we spoke with felt that these mills in Coimbatore could also make combed, gassed and mercerized cotton yarn, such as is needed for export.

At the Vijayamohini Mills we were favourably impressed with the neat and clean surroundings and with the fact that it had recreation quarters for the employees with reading materials, such as magazines and newspapers. The management said that the relationship between management and labour has become much closer since the establishment of the recreation club. A desire was expressed for more magazines from the United States.

At the weaving factory of Travancore Textiles Ltd. we observed

Jacquard handlooms weaving with cotton warp and rayon filling, 48" wide, and making up to 50 yards in one piece. The mill has 300 looms and appears to be efficiently run. The management is in correspondence with Mr. Seth of the Central Weaving Institute in Banaras regarding take-up motion and pick wheels and other implements for the handlooms. The Jacquard heads used in this mill are 400 and 200. Some very interesting Jacquard woven towellings are made here.

We visited Srimoolan Central Cooperative Society, Trivandrum. This is an apex society which has 614 members of which 431 are primary societies and 183 individuals. The looms are ordinary pit looms and frame looms with from 2-4 treadles and no shafts. The quality of the yarn fiber used in this cooperative is very poor. All the dyeing is done in a private dyehouse where the vats are heated directly by wood fires, which means that temperature cannot be correctly controlled.

In a meeting held with Mr. Mani of the Sub-Regional office of the All-India Handloom Board, there was a discussion of some of the proposals under consideration by the State Government of Kerala. Plans have been prepared for establishing eight dyehouses where there are concentrations of weavers. It is intended to heat the vats with wood fires, in the customary manner. Again more, we must emphasize that quality dyeing cannot be done with such facilities. Mr, Velayudhan expressed the view that the Kerala State Cooperative Society could produce fabrics of higher standards if they were informed in detail of export market requirements. He feels that the many thousands of weavers in Kerala State could be persuaded to meet these requirements and weave cloth acceptable to the United States market.

OBSERVATIONS IN MADURAI

The team met with a large group called the Handloom Cloth Merchants Association. We were informed that there are 14,000 handlooms in Madurai proper, of which one third are weaving fine count sarees and the balance medium cloth. As in most of India, the hand weavers here inherited their profession. To the American team this was a most interesting meeting because of the great numbers of merchants and weavers who came and displayed jointly the various types of handwoven fabrics, and because many points of view were exchanged, both as to India's inquiries about the United States and the teams inquiries concerning production methods.

We found here basically the same technical barriers to the export of handwoven fabrics from India to the United States that we encountered elsewhere, namely (1) use of inferior yarns, (2) improper methods of dyeing, and (3) inability of present looms to weave long lengths of fabric in one piece. However, we also found here, as elsewhere, that both private weavers and members of cooperative societies are most anxious and willing to up-grade their quality and to make changes in their looms in order to be able to produce the kinds of fabrics that will enable India's handloom industry to compete successfully in the American market. There is a growing realization that international textile standards must be met.

At the Sarathy Textile and Dyeing Factory we observed some very beautiful cotton table cloths, 50″ wide, also cotton handkerchiefs and cotton blankets, 50″×90″.

This particular factory impressed us because they have their own dyehouse, with the temperature in the vats controlled properly with steam. The boiler used in this dyehouse is heated with oil. They use hydro extractors and all their yarns are boiled off prior to dyeing. This plant has a storage tank for water together with a water softening plant, and it consums approximately 7,000 pounds of water in an eight hour working day. It has a dye capacity of 1,500 pounds per day. They do contract dyeing for weavers in and outside of Madurai.

The work of this small private dyehouse demonstrates that quality processes of dyeing can be achieved in the handwoven industry.

The question was put to Mr. Rajagopalan whether Sarathy Textile and Dyeing Factory dyes for a cooperative society. The answer was that they were doing work for Uraur Cooperative Society, until the Society insisted that they must be given the dye formulas.

We visited the Krishnapurama Weavers Cooperative Society. This Society uses mainly 80 and 100 count cotton yarn for warps and rayon for filling. As elsewhere in India, the words "art silk" are used to identify rayon—a practice which we regard as bad. The cotton used here is not of good enough quality to permit fabrics made from it to find a market in the United States.

We were informed that a cooperative weaving colony is to be built about two miles outside of Madurai. There is to be a central warp shed and the weaving is to be done in the weavers' house. The team would like to suggest that since new facilities are to be built it might be possible to use this occasion to conceive and establish a most modern handloom centre, incorporating new layout of houses with the latest improvements in pit looms. A central training depot, a production weave room and central dyeing facilities should be included. We suggest this for a place such as Madurai which would not immediately have access to one of the five Export Processing Centres recommended in this report.

We visited Venkatachalam & Co. This company uses 20-22s silk warp and cotton filling. The price of this fabric was quoted as $2.75 landed in the U.S. It would have fine borders and isolated motifs using gold and silver. Again, the cotton is combed but not mercerized and gassed. It is the opinion of the team that it is a great pity, when using silk warps and a small percentage of gold and silver filling thread of such high quality, that the cotton is inferior. The American market is willing to pay for full quality, but is not willing to pay for part quality.

On our visit to Madura Mills Ltd. we had a very enlightening discussion with Mr. J.A. Andrews, Managing Director, and Mrs. I.H. Cameron, Deputy Director, with regard to cotton spinning in India. We were informed that India grows a high bred cotton variety called *Rajapalayam and Uganda.* It is similar to the variety of cotton which comes from East Africa called C.O. 4. Mr. Cameron stated that India grows approximately 40,000 bales of this high bred variety and that it would be possible to blend imported cotton with this high bred quality cotton, thereby increasing the total bales available for spinning. The best varieties of cotton that this mill is capable of spinning and the quantities it can spin are as follows :

Rajapalayam—C.O.4	40,000 bales
Surat	60,000 bales
Uganda	5,000 bales

The mill products 300-350 bales of combed cotton per month, and they have more combing capacity than presently required. In the opinion of the manager, there was a possibility that they might be able to produce mercerized combed yarns. They would be willing to discuss this further in the light of additional information about potential needs.

The Madura Mills can produce fancy yarns. This was of great interest to us, because we did not see any fabrics with novelty yarns throughout our tour of India. The novelty yarns that we inspected at this mill compare in structure to the novelties the United States uses in great quantity. Since we are informed that Madura Mills have a production of about 30,000 pounds of novelty cotton yarn per month, and since this yarn could be put on perforated tubes, it would be a good source of supply to be used in fabrics for export to the United States. It was important to know that Madura Mills have the equipment to put up straight cotton yarn on perforated tubes, which in turn could be dyed on perforated tube dyeing machines in the proposed Export Processing Centres. At Present Madura Mills produce 10 to 12 percent of the yarn requirements of the handloom industry of India.

OBSERVATIONS IN THE MADRAS AREA

On our visit to Rani Textiles, we saw a good sample of the type of Madras cottons presently exported to the United States. It is interesting to know that the dyes used here are of such types that after washing they bleed. We understand that in some markets, such as those of Africa, this quality is genuinely appreciated, but in the United States this is not the case. Merchandisers in America have attempted to make the best of the defect by attaching the label, "guaranteed to bleed." While this may help to solve a selling problem by temporarily developing a fad for the inadequacy itself, we cannot help but believe that this is not a solid way to build a market for India. Instead, it creates an unfavourable reputation which may reflect unfairly on other aspects of India's handloom products. India should strive to correct its dyeing facilities, not only for export purposes, but for the benefit of its own textile industry which involves millions of people.

American power loom manufacturers have made many copies of the Madras cottons. We suggest that to meet this situation the Madras weavers develop cottons with inlaid motifs using a pressure harness equipment in order to attain weaving effects that cannot be copied in the United States.

It is of interest to note that Rani Textiles weave up to 100 yards in one piece. This is a matter of getting the proper beams.

In the discussion held at Rani Textiles it was brought out that future facilities such as central dyehouses and laboratories should be made available to both private and cooperative handloom weavers. It is the opinion of this team, based on observations throughout the tour, that some of the best weaving in India is done by private weavers, and that private weavers often display a commendable initiative which can be a resource of great value in the development of India's handloom exports. The Government of India will be well advised to follow policies which encourage this sector of the handloom industry to make progress along with the cooperative sector. The interaction of the two will probably produce better results for India than could be produced by either alone.

We were informed that there are about 20,000 looms within a radius of 10 miles of Madras and many more in Madras State. The following cotton qualities are woven in and around Madras :

XRS	2-60 by 80s×80s per yard
RS	2-30 by 80s×60s per yard 50″ wide
RS	1-15-0 by 60s×60s per yard

We visited V.N.K. Textiles, which exports to Singapore and Ceylon. They weave mostly check patterns in about 16 standard colours. They are equipped to weave fine fabrics, 100×100s. They also weave what is known as fire-fly design which is done through a process of dyeing in the yarn. But as noted throughout our tour of India, dyeing facilities are not adequate for the quality required in exports to the United States.

The team drove to Conjevaram and visited the Kamakshiamman Silk Weavers Production & Sales Society Ltd. This society can produce 50 yard lengths in cloth up to 48″wide using 20—22s silks in the warp and two ends of 20—22s silks in the filling with 110 picks and 110 warp ends. The price is 9 rupees per yard. The team recommended that more than two ends of 20—22s silk be used in the filling in order to arrive at a heavier weight fabric. There are 200 weavers in the cooperative, and they produce about 2,000 yards per month. This society supplies pattern harnesses to all weavers in the cooperative fold. There are three able designers who do the graph paper work for the Jacquard borders. This society showed examples of most beautiful hand weaving of Indian silk.

A meeting was held in Madras with officials of the Government of India and the All-India Handloom Board, some of whom kindly made special trips from New Delhi and Bombay for the purpose. This provided the team with a very useful opportunity to discuss their tour observations informally and to supplement their factual information. The International Trade Show, to be held in New York, was also discussed, with a view to achieving an effective representation of the Indian handloom industry, and the team members expressed their willingness to continue to cooperate for this purpose on their return to the United States.

The meeting brought out clearly that although India's handloom industry has been exporting to countries like Ceylon and other markets in Southeast Asia and Africa, the problems exporting to Western countries are comparatively new to Indian weavers. The team expressed the opinion that there is a great potential market for Indian handloom fabrics in the United States, and that it should be possible by careful planning and hard work for many of India's weavers to achieve the necessary standards of quality. Essential to such an achievement, the team pointed out, are improved yarns, improved dyeing facilities, loom modifications, improved laboratory testing and other technical advances, together with continual attention to design and styling. Also necessary is a well organized marketing effort.

NOTES

On Quality Cotton

We have often mentioned "quality cotton" in this chapter. This means specifically yarns of one of the following types :

1. A. Combed cotton made from Egyptian long staple cotton.
   B. Combed Egyptian cotton mercerized
   C. Combed Egyptian cotton mercerized and gassed
2. A. Combed cotton made from a blend of Egyptian cotton and Indian long staple cotton.
   B. Combed cotton made from a blend of Egyptian cotton and Indian long staple cotton, mercerized
   C. Combed cotton made from a blend of Egyptian cotton and Indian long staple cotton, mercerized and gassed
3. A. Combed cotton made from India's longest staple
   B. Combed cotton made from India's longest staple, mercerized
   C. Combed cotton made from India's longest staple, mercerized and gassed

The suitable type of cotton yarn will be specified by the textile designer. In the United States, the consumer will not purchase quality fabrics woven with carded cotton.

On Quality Dyeing Methods

The direct fire dyeing method which is used throughout India's handloom industry is not capable of meeting United States quality standards because :

A. Varying temperatures result from direct fires burning coal or wood. Uniform temperature cannot be maintained and uneven dyeing results.
B. When using synthetic dyes, it is necessary to control the rate of heating and cooling of the dye bath, which cannot be done when using direct fire.

C. Vat dyes, particularly, need temperature controls within close tolerances. India's existing dyeing methods are unable to meet these tolerances and consequently we have the basic cause for dyes bleeding.

D. Colour matching is impossible to achieve when the dye bath temperature constantly fluctuates, since the colour goes on and off the yarn with varying temperatures.

E. Many vat dye-stuffs are destroyed if specific temperatures are exceeded.

The advantages of a central heating system creating steam are that it makes possible the following controls, all of which are necessary for quality dyeing :

A. Ability to control the rate of temperature rise and maintain any required temperature level.

B. Ability to keep dye baths uniform, using turbulence of water caused by steam.

C. Ability to reach and maintain high temperatures (for levelling) as well as to decrease temperatures in a controlled manner.

CHAPTER 4

A RECOMMENDED DEVELOPMENT PLAN FOR HANDLOOM EXPORTS TO AMERICA

A plan of action for the development of India's handloom exports to the United States must give attention to three major problems.

The first in importance, and also the first in time sequence, as part of a practical action programme is the problem of technical improvement and quality standards. Until India's handloom industry is able to produce consistently to American quality standards and technical requirements, it will not be able to win a respected place in the American fabrics market. This problem of quality standards, which we have emphasized throughout our report, is fundamental. It is already well known to many competent textile technologists in India. For example, we had the opportunity to read reports of certain conferences convened by the Indian Standards Institution on the need for improved technical and quality standards in the handwoven field. Some of the papers presented by the experts in attendance impressed us very much. In fact, our report can be regarded as supporting and emphasizing their contentions. The fact that the quality problem is already recognized in India encourages us in the belief that it can be met and solved.

The second major problem is the creation of better marketing facilities. We mean marketing in the broadest sense, not merely soliciting orders and executing deliveries on time and according to specifications, important as this is. A channel of communication must be established which will link the needs and preferences of the American fabrics consumer to the capabilities of India's weavers and the creative talents of her designers. The burden is on the seller to study the intended market, to develop fabrics especially designed to interest it and to present these attractively.

The third major problem is personnel development. Over the long pull, of course, everything else depends on this. India has some very able men and women who are well versed in textile technology and design, as we can testify from personal experience on our tour. But it needs many more. This calls for a stepped up programme of education and training primarily directed toward the younger generation. Also, however, if India is to enter successfully into a new and relatively unfamiliar fabrics market, and especially one as high in its standards and as competitive as that of the United States, the present generation of skilled craftsmen, technologists and designers must be given opportunities to broaden their horizons.

Our recommendations fall into three groups, corresponding to these three major problems.

First, as a means of tackling the quality problem we propose five Weaver's Export Service Centres in different parts of India. These Centres would supply both cooperative and private handloom weavers with tested materials of the high quality necessary for export to the United States. They would undertake design development based on regional skills and traditions. They would inspect fabrics and certify those that meet export quality standards.

Second, to deal with the marketing problem we propose a sales office and buyer's service in New York, closely linked through a Bombay office with the five Weaver's Export Service Centres. The New York office would be equipped to stimulate interest in India's handloom fabrics, to receive orders and execute deliveries, to offer wholesale buyers a wide selection of samples representing existing and possible Indian fabrics and to develop new ideas in fabric design and styling for the particular needs of the American market.

Third, with reference to the problem of personnel development we will offer a number of suggestions regarding facilities for textile education and training in India and of Indians abroad, as well as a proposed programme of seminars in India to be conducted by invited specialists for the benefit of persons already active in the handloom textile industry.

A word should be said regarding the organizational structure needed to carry out these activities, though we offer suggestions in this field with diffidence. We can speak confidently regarding the technical and business problems of producing and marketing fabrics, but we are not familiar with the legal and administrative framework and the climate of opinion which the Government of India must take into account when deciding how to organize a new activity. However, we can point out that the Weavers, Export Service Centres and the marketing offices will need to carry on business-type operations, including extensive buyıng and selling and new product development. Such operations require a high degree of flexibility and are not well suited to the ordinary procedures of government departments. Therefore, we advise that a special Government of India corporation be created to take responsibility for the handloom fabrics export development programme. It could be called the "India Handloom Fabrics Export Corporation."

The board of directors of the proposed corporation should include, in addition to government representatives, some representatives of cooperative weaver's societies, of private handweavers, of India's large textile weaving mills and of firms with important experience in international trade. We visualize two main activities of the corporation, namely, the establishment and running of the Weavers Export Service Centres within India and the establishment and running of an export marketing organization designed to cater particularly to the United States market (see Chart 3). The three key executives of the Corporation, who should also be members of the board, would be the President or Chief Director, a Managing Director responsible for the Weaver's Service Division and a Managing Director responsible for the Sales Division.

WEAVER'S EXPORT SERVICE CENTRES

To help to bring India's handloom fabrics up to export quality and to assure consistent quality standards we recommend the establishment of Weavers Export Service Centres in the main weaving areas of India. As an essential programme, we suggest the establishment of such centres at :

Banaras —	to serve U.P., Lucknow, Farukhabad.
Bombay —	to serve Bombay, Poona, Nagpur Chanderi and Maheswar.
Madras —	to serve the City proper, Andhra, Hyderabad and part of Madras State.
Calcutta —	to serve Orissa, Bhagalpur and Patna.
Coimbatore—	to serve Salem, Kerala and Madurai.

We recommend that the first or "pilot" centre be established

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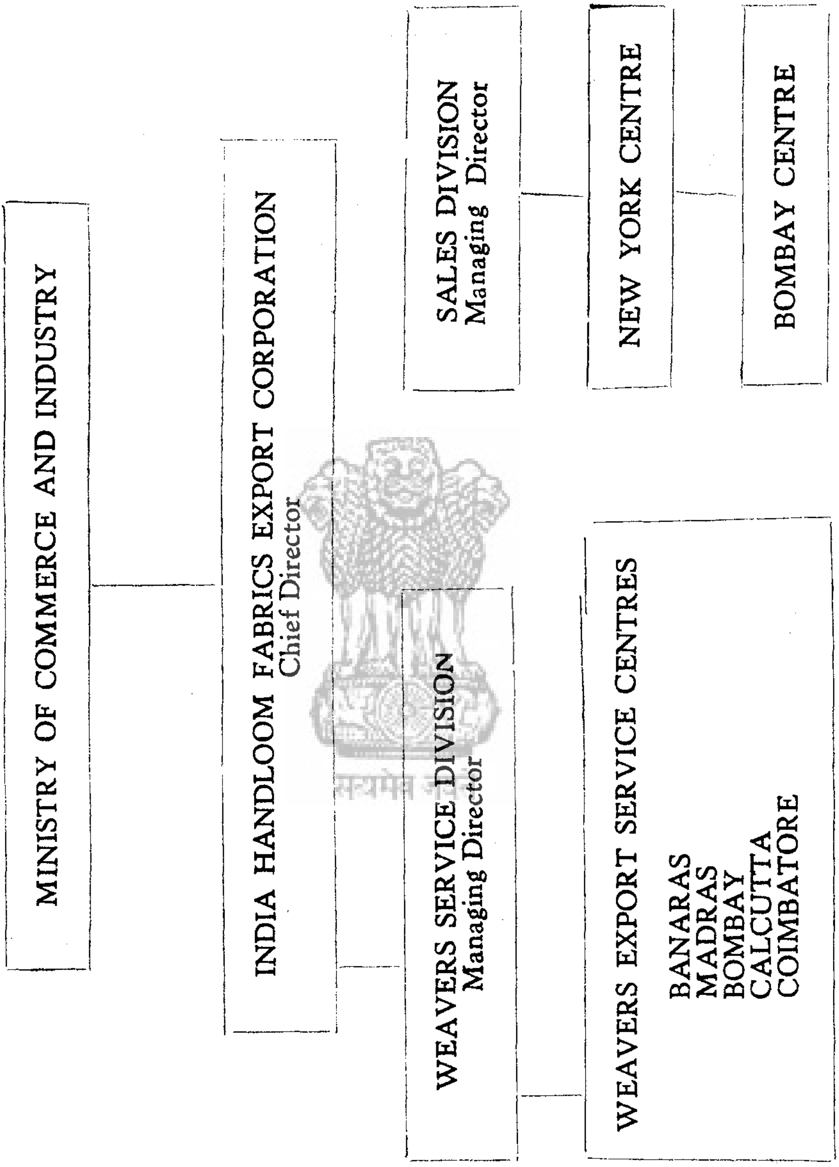

at Banaras. The pilot centre would be started by a specially selected team of India's ablest handloom technologists and designers, of which we shall say more later. Once the pilot centre was in running order the same team, together with other men selected and trained by them, would establish the other four centres.

Description of a Typical Centre

A typical Weaver's Export Service Centre (see Chart 4) would have eight operating departments, besides a general administrative department to handle matters like accounting and building maintenance. Each department would perform specific functions designed to aid the weavers of the vicinity to produce high quality fabrics suitable for export. The centre should serve both the cooperative weavers of its area and the private weavers, who might be organized into an association of export weavers for the purpose. The functions of the various departments will be as follows :

(a) *Raw materials*—This department will purchase raw materials, such as yarns, and hold them in stock both in the raw state and the processed state after dyeing and winding. It will handle both incoming yarn for processing and distribution to hand-weavers directly and/or to the winding and warping department for beaming. It is essential that strict control of quality be maintained and that the dye laboratory work in conjunction with the raw materials department for this purpose.

It is of the utmost importance that individual dye lots be kept in separate bins. Each dye lot should have its own dye lot number and should not be mixed with another dye lot of the same colour. This is the only way to make sure that slightly different colours are not used in filling a given order. This precaution is particularly necessary because of cutting methods used in dress manufacture in the United States, where it is possible for a sleeve of a garment to be cut from one piece of fabric and a skirt of the same garment from another piece of fabric. The fabric for both pieces must be uniform in colour.

(b) *Fabric and Dye Laboratory*—This department will perform two very important functions—testing and development. It will test colours for wash fastness and fastness to light, will test fibres regarding staple lengths, breaking strength size and quality, and will test finished fabrics for breaking strength and abrasion. It will also undertake to formulate a wide range of colours for use in the dyeing of yarn, with the idea of developing what would be known as "stock dyed yarn." It will experiment with new fibres and yarns as well as colours and make new possibilities available to the design department.

(c) *Central dye house*—This department will dye yarn, using both the method of skein dyeing and package dyeing. It is essential that the formulas used for dyeing these yarns come from the laboratory in order to attain quality control. Package dyeing will be used to dye cotton yarn and skein equipment will be used to dye silk yarn. By using package dyeing methods the yarn will be able to be dyed in a uniform manner, and less handling will be needed. Therefore, less breakage and better quality will result in the finished dyed yarn.

(d) *Winding and warping.* In this department yarn will be wound after skein dyeing and after package dyeing. In the case of yarn used for warps, both packages and skeins would be wound on spools for warping. In the case of yarn used for filling, the yarn in the package stage can be used directly from packages, or the packaged yarn can be put on spools. In the case of skeins, the skeins would be put on spools which could also be used for filling. The winding department would be used in cases where it would be necessary to reduce the size of a package before dyeing in a package machine. In the case of warping, warps would be made in this department to specifications for the individual weaver.

(e) *Inspection, certification and shipping.* This department will be responsible for inspection of the finished product and for its certification and shipping. Field inspectors will be used to make spot checks of weavers in their individual homes where fabrics are being woven for export. The field inspector will observe the quality of weaving and will help the individual weaver to improve the standard of his finished woven fabric. The inspection department will also receive finished fabric and look for weave defects (and wherever possible, fabric defects—such as knots, warp skips and filling skips—will be mended by burlers or menders) uniformity of dyed yarn used in weaving, evenness of weaving, and cleanliness of product. The department will work in conjunction with the laboratory to determine whether the standards of export quality have been met on the finished product. If so, it will certify that the finished product is of export quality, and a mark to this effect may be placed on the package. This department will also be responsible for proper packaging of an export order and will need to have the necessary equipment for rolling fabrics on paper tubes or boards.

(f) *Design.* This department will develop new ideas for weave, design and colour in handloom fabrics for export. It will work with the dye laboratory in developing what should be known as a standard colour palette. The design department should combine these colours, developing every possible colour combination to be used in the woven fabric. This department will develop weaves and construction, including warp set-ups to be experimented with in the sample weave room. It will also do two-dimensional design on paper, using the wealth of design which India's heritage has to offer. Design should also be developed from the two-dimensional sketch to point paper in the case of Jacquard and pressure harness designs. It is recommended that the design department set up many blanket warps, as many as 16 colours to a warp, 3 inches each in the warp, trying many filling colours. In this way a library of colour combinations totalling many thousands could be built up. A short-cut method of producing coloured stripe effects should be used, such as taking the palette of yarn colours and winding them around cardboard cards approximately three inches wide and any desired length.

(g) *Sample Weaving and Training.* This department will be used by the Design Department to experiment with new weaves, colour combinations, and designs. It will also be used to develop new samples for export sales. This department will also undertake the advanced training of selected weavers in the weaving of fabrics to meet high standards for export. It will also train weavers in the operation of the more difficult looms recommended to be used in weaving fabrics for export. The creative use of ancient weaving skills and techniques in fabrics for export will be encouraged and developed.

(h) *Loom parts and training.* This department will manufacture loom parts necessary for converting present looms into looms able to produce a minimum of fifty yard lengths in one piece. It will also stock parts for looms, such as pick wheels, take up motions, beams, heddles, shuttles, reeds and all the necessary equipment needed in the weaving of quality fabrics. This department should also train personnel in the manufacture of these loom parts and their proper maintenance, in order to hasten the process of installing large numbers of handlooms that are capable of weaving export quality fabrics.

Proposed Method of Launching the Centres.

To start the first Weaver's Export Service Centre it is recommended that the Government of India select a team of experts to consist of men selected from the ablest in India to fill the following posts :

1. The Managing Director of the Weaver's Service Division of the Export Corporation.
2. The Chief Technical Director of the Weaver's Service Division of the Export Corporation.
3. The Director of the first Weaver's Export Service Centre (pilot centre).
4. The Associate Director for administration of the same centre.
5. A textile chemist with an advanced degree and sound experience.
6. A head yarn dyer with an advanced degree and sound experience.
7. A quality control inspector.
8. A handweaving textile designer.
9. A regional textile commissioner.
10. An outstanding educator in the field of textile technology.
11. A cotton and silk textile engineer.

This team, which might be referred to as the "India Handloom Technology Team," would be sent to the United States for a period of at least two months. It would also visit equipment manufacturers in Germany en route. The team would observe textile quality standards in the United States and study United States textile processing techniques. It would visit textile colleges and would gather technical data on the United States textile industry and its fabric markets. Also, an important part of the team's assignment would be to work out the details of equipment needed for the first Weaver' Export Service Centre and to arrange for purchase of this equipment.

We suggest that the team be met in the United States by a competent American textile technologist who would direct a tour of important textile centres. Such an arrangement might be worked out by contact with one of the outstanding United States textile Institutes.

This team would provide a nucleus of top Indian handloom technologists who, after the tour, would be personally acquainted with many of the problems related to development of India's handloom exports to the United States. On their return they would be able to work together to correct technical faults, to develop suitable new designs and constructions, and to spread the knowledge of export requirements among Indian handweavers.

The key personnel needed to head the various departments of the first Weavers' Export Service Centre would be drawn from this team. In the process of launching the first centre and running it, these key persons would undertake to train others to fill the leading positions in the four Weaver's Export Service Centres which would be launched later.

Technical notes : In Appendix A we present more detailed information on the technical operations of the various departments of the Export-Service Centres, together with indications of the equipment, personnel and floor space needed.

EXPORT SALES OFFICES

We recommend that the Sales Division of the India Handloom Fabrics Export Corporation establish a Sales Centre in New York and a Sales Centre in Bombay.

The Managing Director in charge of the Sales Division should have overall responsibility for both the New York and the Bombay Sales Centres and should be in immediate charge of the one in New York. We recommend that he be an American and reside in New York. He should be a man of outstanding ability to whom complete authority could be delegated. A man with the following qualifications should be sought : (1) broad experience in the merchandising of fabrics in the United States, particularly fashion fabrics ; (2) extensive knowledge of all types of weaving, including a knowledge of fabric finishing ; (3) wide experience in sales promotion ; (4) ability to travel to and from India whenever the need arises.

The New York Sales Centre

It is possible that there might be advantages in organizing the New York Sales Centre as a subsidiary corporation of American registry, wholly owned by the parent Export Corporation in India. This is a point on which qualified advice should be obtained from the legal and other viewpoints.

A New York Centre would be housed in a building which should reflect individuality. A desirable location in New York City would be in the area between 48th Street and 59th Street and between Fifth Avenue and Park Avenue. The building should preferably have three floors, to house three areas of activity.

As indicated by Chart 5, we visualize the following departments in the New York Sales Centre :

(a) *Wholesale sales and buyers service.* This department would either accept wholesale orders for certified fabrics for which it would take full responsibility for execution and delivery, or it would provide information to buyers on the basis of which they might make their own direct approaches to qualified sources of supply in India. It would maintain a sample showroom with a complete selection of handloom fabrics woven in India on display for the convenience of the wholesale buyer and would undertake, with the assistance of the design and sample weaving department, to help the buyer work out his own special ideas.

(b) *Design and Sample Weaving.* This department would work with wholesale buyers in developing fabrics which India would be able to produce. This department would create designs and weave a sample collection for the American Market. It should be staffed by approximately two Indian and two American fabric designers, together with three expert handloom weavers sent from India to the United States. It should have the following six looms, with which we understand it would be possible to weave every type of fabric produced in India today :

Model pit loom, 6 treadles, 4 shaft, plus Jacquard attachment
Frame loom—up to 16 shafts and treadles
Frame loom with centre shaft Dobby.
Benaras silk loom with traditional types of harness, up to 2,000 thread repeat.

Leno Jacquard loom.
One ordinary plain loom.

The first (second floor, in American parlance), is envisioned as housing the wholesale department for both fashion·and home furnishings fabrics.* This is the operation of primary importance. The physical aspect would, of course, be esthetically planned as a sales aid. But more important, the documentation or "library" of fabric samples and the necessary pertinent information would be accurate and complete. A comprehensive selection of India's hand weaving with yarns and techniques, along with a really large colour palette is important.

This floor would also accommodate the design and sample weaving department, which would have a stock of natural yarn and dyed yarn in sufficient quantities to develop the required samples. Natural yarn may also be processed in the United States for special orders. This service to the designers and manufacturers in the wholesale market would work roughly like this: The client would be contacted and invited to view the fabrics India has to offer. Upon inspection she may select several samples for consideration. Accurate and unhesitating information must be available as to yarn content, its landed price, possible delivery dates and other pertinent facts. If the buyer expresses reservations as regards existing designs or colours, or if she wants to see a new idea worked out, the services of the sample weavers are offered. After an exchange of thinking on the desired effects, new samples are designed and woven on the premises and submitted within a reasonable time. If services and translation of ideas have been fruitful, an order will very likely result.

This order, with woven sample and detailed specifications as well as any other order written in the wholesale sales department, will be sent to the office of the India Handloom Fabric Export Corporation in Bombay. It will be the task of the Bombay Centre to determine which Export Service Centre is best equipped to handle the order. Within the specified time, the order, properly executed and inspected should reach the ultimate American cutting table to be made up into the fashions of tomorrow.

Admittedly, this is the well-oiled ideal. But, with time, the right people and hard work, this kind of service can be the means of confidence and growth for the handloom industry.

(c) *Public Relations and Exhibits.* The second (third, in America) floor of the building would accommodate the administrative offices and public relations and exhibits department. This department would endeavour to maintain a consistent flow of news pertaining to India's handloom fabrics, interpreting them to magazines, newspapers, radio and other media. Fashion shows should be planned at advantageous times. Personalities wearing India's fabrics should be photographed and spotlighted. Research material and documentation of fabric origins and techniques should be available for developing "stories" of interest to the public. Packaging, order forms, stationery and other visual tools of the organization should be developed by a competent art director and could serve also as a publicity aid.

The aim of this department would be to bring Indian handloom textiles to the attention of the American buying public and to create a proper climate of acceptance for them. We recommend that a reliable professional firm be retained in this connection.

(d) *Retail Sales.* The ground floor we envision as a retail showroom for consumer sales of not only handloom fabrics, sarees and fashion accessories but for all types of home furnishings' accessories and handicrafts from India. The atmosphere would be that of a fashion bazaar. It should be a most exciting stage setting for India, and also of great cultural value, as well as carrying healthy sales potential. At present there is no one place in America where the panorama of India's talents are strongly brought into focus. In our opinion, there are countless handsome, useful and decorative items seen in India which, in their existing form, would certainly be a contribution to the American scene. We feel that much of what is currently exported to the United States is not of the most interesting that India has to offer.

The person in charge of this division should be discriminating, aware of trends and a moderate non-conformist in taste. The sales person or persons should preferably be Indian, dressed in handsome national fashion. The background should be simple to accommodate the burst of display—perhaps pointed up with a few really good art objects. And why not include for sale a selection of Indian literature—both classic and contemporary ? And music—Indian recordings ? And some India spices, arrestingly packaged ? The object is to project India and make it impossible for the visitor, casual or Purposive, to walk away without having been tempted by some memento. This department would be a useful adjunct to the main wholesale operations, both from the point of view of making India's products better known to the public and as a means of earning revenue to help pay for the Sales Centre establishment.

(e) *Warehousing.* It would be necessary to maintain carefully selected stocks of wholesale fabrics at some point close to New York, so that deliveries of items in steady demand could be made promptly. Stock inventory of retail handwoven fabrics and handicrafts would be kept in this warehouse.

It is hoped that in addition to the necessary staff of an organization such as we have outlined there might be enlisted an honorary advisory board composed of men and women prominent in several facets of the American fashion and home furnishings industries to counsel and advise from time to time.

It is also suggested that young Indian students of fashion design and home furnishings in the United States be utilized as much as possible for clerical or any other kind of work, as a form of apprenticeship. Much of the success of an organization such as this depends on the continual training of personnel and the hoped-for emergence of new thinking and leadership.

The Bombay Sales Centre

The Centre would be equipped to welcome wholesale buyers and to accept their orders and arrange delivery, or place them in direct touch with a reputable Indian firm able to produce fabric of export quality and willing to make use of materials and testing services of one of the Weaver's Export Service Centres. The Bombay office would be the channel through which orders placed in New York would be implemented. It would have the task of selecting the most appropriate place in India from which each order could be filled, forwarding the order to the appropriate Export Service Centre, and following through to expedite proper completion and delivery. We have not shown any design and sample weaving department on the chart for the Bombay Sales Centre because we assume that there will be close cooperation between it and the Design Centre of the All-India Handloom Board located in Bombay and the Export Service Centres.

The Bombay Sales Centre will be under the jurisdiction of the Managing Director of the Sales Division of the India Handloom Fabrics Export Corporation.

The head of the Bombay Centre should be an Indian with the following qualifications :

1. Be familiar with the American and the Indian methods of doing business.
2. Be understanding of the many problems and details confronting American manufacturers and merchants.
3. Be an experienced expediter.
4. Be able to assume responsibility and follow through with the many problems concerning production orders and promised delivery dates.
5. Possess a personal sense of responsibility toward his job and the many details of communication that will exist between the New York Centre and the Bombay Centre.
6. Be thoroughly familar with India's Handloom Industry.

Only certified handwoven fabrics would be handled in this Sales Centre. It should serve both the visitor to India who seeks unique fabrics and accessories to carry home as gifts and the visiting manufacturer or designer who wants to obtain sufficient yardages to make a sample garment to be offered for sale in America. Excitement can be generated, of course, by the physical effect of the showroom as one enters. Attractive, friendly personnel, well dressed and groomed create first impression which often become indelible.

Roughly, the Sales Centre would probably have two areas of activity. One would be administrative, and in particular would expedite wholesale orders, both those which originate in Bombay and those which originate in New York. An exact duplicate of the fabric and colour library in New York will be required as well as necessary data.

The India Handloom Fabrics Export Corporation should issue a pamphlet to be distributed to cooperatives and private weavers in and around the five Service Centres. This pamphlet should describe in detail, the weaving standards necessary for India's handloom fabrics export program.

The other service area will be retail. Besides the sale of fabrics we suggest perhaps a few actual ready-to-wear articles of wearing apparel, both for men and women, made with Western needs and sizes in mind. Simple shirts, skirts, robes, etc. would suffice at the onset. Some design direction here should prove rewarding. It is also suggested that a tailoring service be made available through this Sales Centre. The visitor views the fabrics, makes a selection and is accommodated by a tailor on the premises who takes measurements and completes the garment by the date of the customer's departure. A display of fashion sketches suggesting ways and means of using the fabrics and colours would be a further stimulus.

In addition, there would be a stock of varied accessories, all using handloom fabrics—such as bags, umbrellas, belts and the like. A lively and varied stock, a fashion bazaar atmosphere and "service plus" should make this a most enchanting place for the browsing tourist—and in turn make profits. At present there is not a great enough variety of small items for the air traveller to buy. With the sure-to-grow tourist business, the handloom industry should put much design effort in this direction.

PERSONNEL DEVELOPMENT

Success in the production and sale of quality handloom fabrics in the export markets which India wishes to cultivate will depend upon building up a core of adequately trained, broadly experienced persons. India must take steps to increase the number of persons available to its handloom industry who have a thorough knowledge of techniques in all phases of the manufacture of quality fabrics and persons who have an intimate and continually up-to-date understanding of the peculiar needs and preferences in the markets to which India hopes to cater.

Developing Textile Technologists

We recommend that the government help to expand and improve the facilities at such textile institutes in India as these :

1. V.J.T. Institute, Bombay
2. Technological Institute, Bangalore
3. A.C. College of Technology, Madras
4. Delhi Polytechnic, Delhi
5. Technological Institute of Textiles, Bhiwani

The present curricula should be revised so that special emphasis is placed upon the fields of textile chemistry and dyeing. Textile designing as well as textile engineering should be included.

It is our opinion that India's method of textile yarn dyeing is antiquated when compared with modern methods as practiced by the world textile industry. Until this condition is corrected, India can never hope to export its products in any large quantity. Dyeing is a highly technical process, and it needs technically trained men. Only institutes such as the ones mentioned will be able to develop these technicians. With the development of dyestuffs as manufactured by the Imperial Chemical Company, Dupont, Giegi Chemical Company, Ciba Chemical Company, and others, it is necessary for the dyers to have the proper training in order to be able to handle these new dyes. India is still using the dyeing methods of centuries ago and attempting to work with these new chemicals with wholly untrained people. This cannot be done, and therefore we stress again the importance of textile institutions developing the necessary textile chemistry and dyeing specialists.

A textile engineering course which has been functioning for many years should be developed to emphasize raw materials indigenous to India, particularly spun silk, wild silk and cotton. In the case of cotton, instruction in combing, mercerizing and gassing should be in the curriculum. Instruction in how to combine India's various fibres in order to develop new qualities should be included in order to inspire creative thinking in textile engineering. The romance of textiles, as well as its fundamental uses, should draw the best possible natural talent for textile technology to these institutions.

The Indian Government should sponsor a programme of sending students to textile institutes in the United States. Two schools we recommend are Lowell Technological institute in Lowell, Massachusetts, and Philadelphia Textile Institute in Germantown, Pennsylvania. We have been informed that in 1958 Lowell will have openings for 65 foreign students and Philadelphia slightly more.

The Indian Government in cooperation with the handloom industry should also sponsor many scholarships to textile institutes throughout India.

India has many qualified and able men in the field of textile technology, but it is our opinion that there is little liaison between them and the Indian handloom industry. We recommend that an export advisory council be set up with the help of the Indian Standards Institution, to meet periodically with personnel from the Export Service Centres to discuss new developments in the world textile field and in India, such as new dyes, new finishes, new fibres and new handweaving machinery.

Developing Imaginative Design Leadership

We were gratified to note the intense interest being shown by the All-India Handloom Board in the field of creative textile design. Under the leadership of Mrs. Pupul Jayakar, Design Centres are being built up which are certainly moving in the right direction. Mrs. Jayakar understands the need for design stimulation in India's handloom industry, and already her exceptional sense of design and colour is beginning to be felt, as the team was able to observe in the Bombay Design Centre. We urge that this work be continued and expanded and that it be brought into association with the proposed Weaver's Export Service Centres, each of which should have a design department.

In developing exports, India's textile designers must have a training which equips them to combine two things : They must know how to draw upon India's own rich heritage, and they must know how to adapt the inspiration obtained from this heritage to the current living needs of other countries and twentieth century ways of life.

As for India's own heritage, we suggest that a re-evaluation should be made of the material used for training designers in textile institutes. It is our opinion that India has to some extent overlooked the wealth of handwoven fabric designs which were made centuries ago. These fabrics, which are now in many of the museums throughout India, represent a resource which should be used for today's instruction. The design departments of India's textile institutes should avoid teaching what they believe to be Western designs. The graduate textile designer, besides acquiring a thorough grounding in the practical approach to textile designing, such as designing on point paper for Jacquards and the threading of harnesses into intricate design possibilities, should blend this knowledge with a thorough study of the history of art and design of historic India.

It is also very important for India's designers, together with her exporters and weavers, to study the structure and needs of markets which India hopes to cultivate. They should become aware of the patterns of living which affect the market, and it would be useful to arrange for seminars or discussions with specialists in the field from America.

Although it would probably be almost impossible for most top-working people in the American fashion industry to spend a lengthy period of time in India, it is probable that some could be enlisted for a short period— such as three or four weeks away from their desks. The audience reached should be not only technical students interested in the textile industry and young designers, but all levels of personnel attached to Government organizations which serve the handloom industry, leaders of co-operatives, merchants, weaves, sales personnel, etc. It cannot be over-emphasized that one of the great lags in the fabric industry is the lack of understanding of the particular markets to be reached—in this case, the American one.

To be effectual and worth the efforts of busy people willing to devote time to this, a very concretely planned programme would have to be spelled out. If it is decided to put such an educational scheme into work, we would be happy to advise as to personnel from both the home furnishings and fashion industries, and to help on programming directions.

It is thought that perhaps Fulbright or other grant students in India, if interested in the textile area, might be enlisted to remain and continue working and teaching for a period of time. It is also suggested that an untapped source of technical and design teachers may come from those professionals who have chosen to retire and have achieved a satisfactory economic security. Such persons are likely to consider this kind of work an interesting challenge and in our opinion could contribute much. This type of personnel could be located and screened with little difficulty.

It is recommended that a series of educational films on various aspects of the American fabrics markets would be of great value. Needless to say, visual education has had proven success. A very exciting series is possible here.

Library material would also do well to be enlarged for educational services. Guidance on this from some person such as the librarian in charge at the Brooklyn Museum Fashion Laboratory would be possible.

Finally, we should like to conclude with a few words on the need and opportunity for creative change and adaptability, looking toward the production of beautiful fabrics rooted in great tradition but suited to our times.

Dr. Sarvapalli Radhakrishnan has said—"if there is any distinctive quality of our age, it is the getting together of different parts of the world. In the future, man will not talk of our age as the age of wars, rumours of wars, and economic dislocations, but as an age in which different parts of the world have come to jostle each other, and thus the fundamentals and the different attitudes of life have been drawn into closer intimacy. This is the most prominent characteristic of our age."

In contemplating the living patterns of the last several decades as we approach this new vista before us, the great changes wrought by easier communications and accelerated travel are most impressive. The "look" of our times is undergoing a metamorphosis as our world becomes smaller—and we hope—in time, one.

We have the privilege today to be living through perhaps the greatest change in world history. Change is inevitable. Those who face squarely and eagerly the challenge of orderly change will find creative directions. Change creates the demand for new products, new directions for traditional products, new tastes and attitudes which accelerate the wheels of productivity. This productivity supports more people, raises the standards of living and stimulates the creative impulses, which, again in turn, leads to greater productivity.

The creative impulses in our times must be nurtured. The creative temperament is needed not only in the artist, the musician, the writer, but in the craftsman, the weaver, the inventor, the technician, even in business. There should be no divisions in creativity. It must be part of our daily lives. It is a vital need.

India is now feeling the effects of this "jostling", as Dr. Radhakrishnan says, from other parts of the world. As she views other patterns of living, as her young people visit other shores, as she receives visitors from other lands, as she listens to all sides, she is bound to change many of her traditional ways of thinking and doing. This is true in all fields, and it is especially pertinent to creative efforts in the field of this report—beautiful fabrics.

A few able leaders in India's fabric field have realized the need for a re evaluation of the tools and skills at hand. The time is ripe for new directions for India's most indigenous talent—weaving. Help, advice, information is being eagerly sought from other countries which are ahead in organization. All sides of this problem—to put more hands to work, to produce a product which can compete strongly with other countries and to market it successfully—are being examined by India in all lights. This is healthy. The attitudes are right. The future must be bright. But there is much to be done—and it cannot be done by simply knowing the problem or listening to consultations. It must, in the end, be done by India herself.

Indians must feel the urgency, the excitement, the satisfaction of creative planning toward a quality fabric industry which will be recognized in all world markets. Nothing is accomplished overnight. Even with able and dedicated leaders to change outmoded methods of working, emotional attitudes, *and fear of change,* it will take years to build a secure and thriving competitive fabric industry. But the beginnings can be now.

With each dedicated and skilled technician or organizer or designer or weaver, ripples will be sent out like a pebble dropped in water. With a sense of accomplishment, more people will be inspired to delve, to question and to seek improved ways and means. The creative approach is the only one. It will bring economic benefits as well as emotional satisfactions. India's own cultured and vigorous minds will certainly "ripple the waters" to this end.

APPENDIX A

TECHNICAL SUPPLEMENT TO CHAPTER 4

Details on Departments of Proposed Export Service Centres

1. Administration

Functions: General administration and coordination of the entire Weavers Export Service Centre. The responsibilities specifically entail the control of all financial dealings such as accounts payable, accounts receivable, payrolls and budgeting. This Department also handles the control of personnel and general purchasing aside from raw materials and any and all problems that the director might need assistance with.

Personnel: Department head, clerical and bookkeeping help, the number depending on the total activity of the Centre.

Equipment : Usual office equipment.

Space : 2,500 square feet.

2. Raw Materials

Functions : Purchasing of raw materials, such as yarns the inventory control of yarns in the raw state and in the processed state after dyeing, winding and warping. This Department will handle the distribution of dyed processed yarns in either warp or filling form directly to the handweaver. It will also handle the writing of all processing orders to the other departments so that each department will have specific instructions as to how to process given raw material for a particular order. Orders will be written to the laboratory, the dye house, the winding and warping department. The expediting of raw material in these various steps of processing to insure proper delivery is also a function of this department. Records will have to be kept to show the production stages that all orders are in. Inspection officers would advise this department of weaving progress regularly.

Each processing centre would carry a perpetual inventory of specific yarns counts dyed in specific stock colours. The fibre count and colour of the stock yarns would be selected based upon yarns and colours that are indigenous to the particular geographical area where the centre is located. The Design Department of the centre would be constantly developing fabrics for export using these stock yarns.

It will be essential that this department work very closely with the dye laboratory in order to be assured that the natural yarn purchased is meeting quality standards and that dyed yarn being processed for orders is laboratory controlled for quality. It is of utmost importance that inventories of dye lots awaiting delivery to weavers be kept separately and not mixed with other dye lots. Each dye lot will carry its own dye lot number for positive identification. This is extremely important in the results of finished fabrics if they are to be used in the United States for reasons explained in Chapter 4.

Personnel : Department Head, a technically trained assistant, material handlers and clerically trained record keepers.

Equipment : Individually partitioned bins, each bin to hold a maximum of 200 pounds of yarn, with a slot to mark identifying lot numbers. Scales to weigh yarn, record systems to control flow of raw material and inventory general office equipment.

Space : 5,000 square feet.

3. Fabric and Dye Laboratory

Functions : Quality control and development.

Quality control involves checking all processing in the central dye house to insure proper colour standards, testing and approving greige yarn as received in the centre, testing finished fabric for the proper number of ends, picks, weight per yard, breaking strength and abrasion characteristics. The laboratory will work closely with the Inspection Department when fabric defects are recognized and will cooperate with the departments in which these defects occur in an effort to correct them.

The function of development involves formulating new colours that give unusual practical and esthetic qualities and submitting them to the Design Department, and experimenting with new fibres and yarns that might give unusual practical and esthetic qualities.

Personnel: The head of the laboratory should be a textile chemist with an advanced degree and practical dyeing experience ; he must also have a knowledge of the chemicals available from various dyestuff companies and the performance of these upon specific fibres. Other personnel are laboratory technicians for daily routine of quality control and testing.

Equipment

A. Torsion balance as used for the determination of deniers
B. Single thread breaking strength tester
C. Twist tester—improved type electrically driven
D. Fabric breaking strength tester
E. Hundingdon 'Texilscope'
F. 'Knowles Patent Yarn Balance' (Goodbrand)
G. A good chemical balance
H. Projector microscope
I. Wear tester
J. Bursting tester
K. Yarn examination machine (for uniformity)
L. Wrapreel
M. Conditioning oven
N. Reflector for testing fabrics
O. 'Stubbs' yarn balance
P. One microscope and a few other good quality counting glasses
Q. Yarn assorting balance
R. Dye fastness testing machine (fastness to rubbing)
S. Fadeometer
T. Viscometer
U. Tintometer
V. Dye fastness testing machine (fastness to washing)
W. Electric humidity tester
X. A complete set of apparatus and chemicals for making various chemical tests
Y. MacBeth light machine to control matching of colour.

This list of equipment is not complete, since each laboratory needs particular equipment based upon the types of materials and weaves most used in the region. The technological team selected to launch the centre will have to determine the exact equipment necessary for the laboratory.

Space : 2,000 square feet.

4. **Central Dye House**

Functions : Dyeing yarn that is used in the service centre according to laboratory formulas. Yarn must be dyed to match samples submitted and to conform with delivery schedules set up. Each dye order that is received by the central dye house will be accompanied by a laboratory formula and a specified delivery date. No shipments will be made from the dye houseu ntil laboratory approval is received.

Personnel : Experienced head dyer, two assistant dyers, approximately six floor dyers, all with dye house experience, additional general personnel will be needed to operate the dye house.

Equipment

A. One skein dye machine with 27 arms with a total capacity of approximately 200 lbs. This machine can be compartmented into three sections of 12-3-12 arms each. Each compartment will have a capacity of approximately 85-25-85 lbs. Each compartment can dye a separate colour at the same time.
B. One 500 lb package dyeing machine
C. Two 300 lb package dyeing machines
D. Three 100 lb package dyeing machines
E. One 50 lb package dyeing machine
F. One 25 lb. package dyeing machine
G. Necessary drying equipment and boiler, to be fired by either coal or oil to generate steam.
H. Water softening unit.

A dye house with the aforementioned equipment would have a total capacity of approximately 20,000 lbs. per week on one eight hour shift. It is entirely possible that the proportion of package to skein equipment will vary depending upon the area in which the service centre will be set up. Package dyeing is more efficient for some fibres, while skein dyeing is more efficient for other types of raw material.

The size of lots going through the dye house and the ability of the service centre to specify fully machine loads on the package equipment is also a factor in determining the exact machinery to be used. It is generally thought that skein equipment is more versatile as to the poundage and variety of fibre that can be dyed on it. In any case, the team which is to launch the centres will determine the type of exact equipment necessary.

Space : 10,000 square feet.

5. Winding and Warping

Functions : Winding yarn prior to correlate dye lot size to number of spindles in package machine, winding yarns to spools in preparation for warping, making warps of required pattern arrangements.

Personnel : Department Head with winding and warping experience. Experienced winding and warping personnel, the number depending upon the activity of the centre.

Equipment :

A. Several spool winders equipped to wind from skeins or tubes.
B. Several sectional or horizontal warping and beaming machines.
C. A supply of beams of the type to facilitate longer warps.

Space : 3,000 square feet.

6. Inspection, Certification and Shipping

Functions : Periodic inspections in the homes of the weavers to be carried out by field inspectors. The field inspectors will gather detailed data about looms in the area. They will help the weavers by observing their work and suggesting methods for improvement of quality. Final inspection and certification will be made at the centre by the chief inspector. Fabrics will be inspected for weave defects, uniformity of colour, evenness of weaving, cleanliness of fabric, end and pick count in fabric, weight per square yard, tensile strength, wash fastness and dry cleanability. Inspection for abrasion resistance will be carried out if the fabric is to be used for upholstery. Some of these inspection criteria would be determined by laboratory tests.

Where possible fabric defects (such as knots, warp skips and filling skips) be mended by burlers or menders.

Personnel : A chief inspector, two assistants, field inspectors, burlers and menders, material handlers, shipping clerks. The chief inspector and his assistants must have a complete knowledge of weaving quality fabrics and if possible a knowledge of chemistry and dyeing. The selection of the chief inspector is extremely important, since the complete responsibility for certification is his.

Equipment :

A. Cloth folding or rolling machines which measure in the same operation. These machines will be used to put fabrics on fold boards or paper tubes (It is important that fabrics being exported from India be put on fold boards or tubes to avoid wrinkling and creasing during shipment.) These machines will also be used to measure the yardage and check the width of the finished fabric.

B. Several hand examining machines. These machines will be used for mending of the finished goods.

C. Certification stamps, labels, and proper weight paper for use in packaging the finished bolts of fabric in order to prevent damage when exporting.

Space : 3,500 square feet.

7. Designs

Functions : Developing ideas for weave, design and colour in handloom fabrics for export to the United States. The Design Department will work with the dye laboratory in developing what should be known as a standard colour palette. The Design Department should combine these colours, developing every possible colour combination to be used in the woven fabric. The Design Department will develop weaves and constructions, including warp set-ups with the cooperation of the sample weave room. It will also do the two-dimensional design on paper, using the wealth of design which India's heritage has to offer. Designs should also be developed from the two-dimensional sketch to point paper in the case of Jacquard designs and pressure harness designs. It is recommended that the Design Department set up many blanket warps, as many as 16 colours to a warp, three inches each in the warp, introducing many filling colour combinations in this way, produce a library of colour combinations totalling many thousands. A short cut method or producing coloured stripe effects could be used, by taking the palette of yarn colours and winding them to any desired width around cardboards approximately three inches in height.

The Design Department should sponsor handweaving design contests, for example, one design contest would require using one size cotton yarn with a particular size filling and a given number of colours, another contest would concern various striped effects another contest could be on a combination of cotton warps and spun silk fillings, and on Jacquard weaves with a stipulated number of hooks and warp ends.

Personnel : He or she should be familiar with the history of art and design in India, the design potential of the handloom and the raw material available to India. Also required are a feel for good colour relationships and a knowledge of the production processes used in fabrics manufacture. The following will be needed to work with the head designer.

A. A group of graduate art students with some or all of the above listed qualities and the ability to draw
B. A photographer to make a documentary photo library for use in designing.
C. Textile technologists to translate two-dimensional designs to fabric
D. Point paper designers
E. A stylist familiar with style trends in the United States..

Equipment :

A. Necessary equipment to house a fabric library as developed in the weave room.
B. A library of books representing the history of art in India.
C. Photographic equipment, including enlargers and reducers.
D. Light glass for tracing and all other equipment necessary in a typical design room.
E. Weave room looms.

Space : 2,500 square feet.

8. Sample weaving and training

Functions : Training selected weavers in the art of handweaving so that the versatility of the handloom can be fully exploited.

Development of new weaves, designs and colour combinations, in cooperation with the Design Department.

Personnel : A department head acquainted with all areas of handloom weaving and able to train personnel. Approximately eight weavers.

Equipment :

A. Pit looms having six treadles and four shafts, plus Jacquard attachment.
B. Frame looms with sixteen treadles and shafts
C. Frame looms and shafts with overhead Dobby arrangement
D. Frame looms centre shed Dobby for towelling
E. Banares silk looms with the traditional type of harness, up to 2,000 thread repeat
F. Leno Jacquards
G. Several ordinary, plain looms.
H. 120 Hook Jacquards as made in Madurai, with pressure harness attachment that could be installed on looms.

All of the above looms must be equipped with the most modern parts. For example, automatic take-up motion capable of making 50 yd. minimum pieces. This weave room must be equipped to weave the finest handloom fabrics that can be produced in India.

Space : 3,000 square feet.

9. Loom Parts and Training

Functions : Manufacture of loom parts and supplies for distribution to weavers; training of personnel in the manufacture of these parts and in loom maintenance. The first specific duty will be to manufacture loom parts necessary to convert present looms into looms capable of weaving quality fabrics and of making 50 yd pieces. This Department will make and stock parts for the loom which will be available to the weaver, such as pick wheels, take-up motions, beams, treadles, shuttles and reels.

Personnel : A Department Head with a thorough knowledge of the various types of handlooms throughout India and of manufacturing procedures for loom parts. Several assistants will be necessary.

Equipment : The necessary equipment for this department should be determined by the technical team members selected to visit the United States.

Space : 3,500 square feet.

Summary of Estimated Space Requirements for an Export Service Centre

Administration	2,500 sq. ft.
Raw materials	5,000 sq. ft.
Fabric and dye laboratory	2,000 sq. ft.
Central dye house	10,000 sq. ft.
Winding and warping	3,000 sq. ft.
Sample weaving and training	3,000 sq. ft.
Inspection, certification and shipping	3,500 sq. ft.
Loom parts and training	3,500 sq. ft.
Design	2,500 sq. ft.
Employees recreation room	2,500 sq. ft.
Total	36,000 sq. ft.

The employees recreation room listed above would be used for lunches and general relaxation during rest periods. It should be supplied with reading materials, including magazines and books from the United States with special emphasis on fashion illustrations and home furnishings.

The building should be a split-level arrangement, creating a spacious atmosphere by the use of steel and glass, similar to a building we saw in Hyderabad, known as The Government Village Industries Training Centre. The administration should be on the upper level. It is very important that each department should have good light particularly the laboratory and the dye house. Competent advice will be needed from an architect familiar with problems of industrial layout to produce greatest efficiency.

Chief Technical Director, Weavers Service Division

The managing director in charge of the Weavers Service Division of the Handloom Fabrics Export Corporation should have as his right-hand man a very able textile technologist who would serve as Chief Technical Director for all the Weavers Export Service Centres. The qualifications for the Chief Technical Director :

1. Thorough knowledge of India's complex handloom industry.
2. Familiarity with every type of loom used in India's hand-weaving industry.
3. Knowledge of all fibres grown in India.
4. Knowlege of the spinning of these fibres.
5. Knowledge of the dyeing of these fibres.
6. Knowledge of the machinery necessary in the processing of raw materials and in their weaving.
7. Knowledge of the design possibilities of all of India's loom types.
8. Some familiarity with export requirements, especially with ways of living that condition fabric uses.
9. Broad knowledge of weavers cooperatives.
10. Broad knowledge of private weavers and their role.

APPENDIX B

COOPERATIVE WEAVERS EXPORT WORKSHOPS

We suggest that a cooperative export production workshop be established by the State Cooperative Society in every city which will have a Weavers Export Service Centre. This export production shop would be entirely apart from the Service Centre, but would make use of its facilities.

Physical conditions and technical supervision should be such that the quality of weaving and finished goods will be of the same high standard as the processed yarn which will be supplied by the Service Centre. This workshop could start with 200 looms that are of the types found in and around the area. The looms should include all of the improvements necessary to weave long pieces and high quality fabrics for export to the United States. The necessary loom parts would be obtained from the Service Centre. The capacity should be approximately 250,000 yards per year. Finished goods would be sent to the Service Centre for certification and shipping to the United States of America.

The Director of the Cooperative Weavers Export Workshop should be of high caliber, with extensive knowledge of hand weaving.

The staff should be recruited from among the best technical men in the handloom industry. The Workshop will concern itself with only weaving. All other operations will be handled in the Service Centres. The Workshop will receive an order (in the same manner as any other cooperative society or private weaver) from the Bombay Office of the Handloom Fabrics Export Corporation. Warps ready for weaving will be supplied by the Service Centre on beams. The filing will be supplied by the Service Centre in skeins or tubes. The Workshop should have an automatic quilling machine. The reason for this quiller is to initiate mechanization and quality manufacturing methods not directly connected with the loom itself. This Workshop would be an experiment and act as a model for many future centres throughout India.

APPENDIX C

DETAILED ITINERARY OF THE TEAM'S VISITS

Date of arrival in Bombay	27-10-1956
Date of departure	30-10-1956

PLACES VISITED IN BOMBAY

Madanpura
Bombay City Weaver's Society.
Jacob Circle, Nagpada, Rippon Road.
Modern Weaving Centre, Lalbagh.
Khatau Mills.
Handloom House.
Design Centre of the All India Handloom Board.
Chitra Kaliniketan and Indian Arts Palace.
Briefing conference in the Office of the Textile Commissioner.
Technological Laboratory, Adenwala Road, Matunga.
Meeting the Press in the Office of the Textile Commissioner.

Date of arrival in Delhi	30-10-1956
Date of departure	1-11-1956
Date of arrival in Banaras	1-11-1956
Date of departure	4-11-1956

PLACES VISITED IN BANARAS

Government Central Weaving Institute.
Discussions with Officers and Trade representatives.
Indian Fabrics and Banaras Silk Museum.
Show Room of the U.P. Industrial Cooperative Association.
Sarnath—Hafiz Samiullah Barkatullah.
Prakash Brothers.
Viswanath Temple.
Indian Textiles, Gyanbapi.
Indian Arts Palace.
District Handloom Weavers Cooperative Society.

Date of arrival in Calcutta	4-11-1956
Date of departure for Bhagalpur	4-11-1956
Date of arrival from Bhagalpur	6-11-1956

PLACES VISITED IN BHAGALPUR

T.N.J. College, Bhagalpur.
Nathnagar Government Silk Institute.
Narga Noor Weavers' Cooperative Society, Nathnagar.
Nathnagar Weavers Cooperative Society Ltd., Bhagalpur.

PLACES VISITED IN CALCUTTA

Sales Emporium on Chittaranjan Avenue.
Central Marketing Organization at 10, Wellington Street

Date of arrival in Madras	7-11-1956
Date of departure for Hyderabad	8-11-1956
Date of arrival in Hyderabad	8-11-1956
Date of departure	10-11-1956

PLACES VISITED IN HYDERABAD

Hyderabad Handloom Weavers Central Cooperative Organization,
Narayanaguda.
Karwan Centre and Furnishing Fabrics Society at Ambarpet.
Production centre of Secunderabad Weavers Cooperative Society, Shalibanda.
Government Cottage Industries Sales Depot.
Secunderabad Sales Emporium.
Village Industries Training Centre.
Office of the Director of Commerce and Industries.

Date of arrival in Bangalore	10-11-1956
Date of departure	14-11-1956

PLACES VISITED IN BANGALORE

Handloom Research and Design Centre.
Silk Emporium, Jumma Masjid Road.
Janaedhan Silk Factory.
Pattern Making Factory.
Spun Silk Mills, Channpatna.
Ribbon Industries, Sowroshtrapet.
Sri Krishnarajendra Technological Institute.
Vijyalakshmi Hall.
Sitalakshmi Hall.
Poornima Silk House.
Lecture by Mr. Kroll to the students of the Sri Krishnarajendra

Technological Institute.

Date of arrival in Trivandrum	14-11-1956
Date of departure	17-11-1956

PLACES VISITED IN TRIVANDRUM

Raj Bhavan.

Balaramapurum Weavers' Production-Sales-Society Ltd.

Messrs. K.M.S.P. Ganapathy and Sons.

Vijyamohini Mills, Thirumalai.

Travancore Textiles Ltd., Nemom.

Travancore Sirmoolam Handloom Weavers' Central Cooperative Society Ltd., Trivandrum.

Visit to Cape Comorin and back.

Sub-Regional Office of the All-India Handloom Board, Trivandrum.

Date of arrival in Madurai	18-11-1956
Date of departure	19-11-1956

PLACES VISITED IN MADURAI

Meenakshi Temple.

Meeting of producers and designers at Saurashtra High School.

Sarathy Textile and Dyeing Factory.

Krishnapuram Weavers' Cooperative Society.

Show Room of the Madras State Handloom Weavers Cooperative Society.

Madura Mills.

Venkatachalam & Co., master weavers.

Messrs. S. N. Ramaiyer; master weavers.

Date of arrival in Madras	20-11-1956
Departure to New Delhi.	23-11-1956

PLACES VISITED IN MADRAS

Saidapet Weavers Cooperative Society.

Office of Imperial Chemical Industries.

Madras State Handloom Weavers Cooperative Society Saree Museum.

Government Technical Institute.

V.N.K. Textiles.

Rani Textiles.

Show Room of Andhra State Handloom Weavers Cooperative Society.

Madras State Handloom Weavers Cooperative Society.

Kamakshiamman Silk Weavers Cooperative Society, and Marketing Society, CONJEVARAM.

APPENDIX D

FABRIC COLLECTION

During its tour of India's handloom centres, the team selected samples of many fabrics and had them placed in two duplicate swatch books. It is our recommendation that one be kept in Bombay and the other in New York, where it will be useful to the proposed New York Sales Centre and its advisory committee.

The fabric swatches were selected for several reasons, such as examples of weaving technique, indigenous regional types, texture, design, and for reasons for study. They are not intended as recommendation for export in their existing state, but only as possibilities for development. At attempt has been made to pin-point areas of the fashion and home-furnishings industries in the United States where these types could best be utilized. If India chooses to seek a greater United States export business, emphasis must be put on the necessity for quality standards, established market procedures, and ultimate designs suitable to the American patterns of living.

APPENDIX E

BIOGRAPHICAL DATA ON MEMBERS OF THE TEAM

Mr. Boris Kroll—Textile Designer and Manufacturer

Boris Kroll began his career twenty-five years ago as a handweaver, creating new novelty yarns and weaves to achieve texture. He was intrigued by the machine Jacquard Loom and its potentials and was a pioneer in the development of textured machine Jacquard fabrics. His fabrics, famous for their unique use of color and exotic design conceptions are constructed for maximum durability.

These fabrics, designed by Mr. Kroll and manufactured by Boris Kroll Fabrics, Inc., are sold in his eight showrooms throughout the United States to the decorative trade. Each year Mr. Kroll places on the market a collection of coordinated upholstery and drapery fabrics which is considered one of the most extensive in the country. A style leader in his field, Mr. Kroll is concerned with the technological processes of designing and weaving and continually explores and develops the uses of new fibres and production techniques. He maintains his own weaving factory, and has established one of the first research and testing laboratories in the upholstery and drapery fabric field and a fabric library which contains over 30,000 samples of his weaves and colourings.

Mr. Kroll has had many exhibitions, and has received numerous design awards throughout the United States. His fabrics are used in ocean liners, airplanes, hotels government buildings and other public areas, as well as in the finest homes in America.

Miss Bonnie Cashin—Fashion Designer

Bonnie Cashin is well known in the United States for her contributions to the wholesale fashion market and as having spearheaded directions in many areas of women's wear design. Although her major activities have been in the loosely-termed American "sportswear" industry, her background includes design for ballet and theatre, and custom made-to-order. A six year period as costume designer for 20th Century-Fox Studios in Hollywood added up-to some 60 motion picture credits, including such assignments as "Laura" and "Anna and the King of Siam." She is now operating in New York under "Bonnie Cashin Designs, Inc.," serving as consultant and designer to diversified manufacturers within the framework of the fashion industry. Contributions have been made in such fields as sportswear and playwear, raincoats, suits and coats, suede and leather clothes, at-home clothes and robes, and evening wear. She also endeavours to consistently give attention to a small made-to-order clientele, which she feels is a necessary "laboratory" for ideas and may later serve the larger wholesale markets. Her great interests are the arts and people, which is reflected in her designs in step with today's patterns of living.

Her origins are Californian. She has been the recipient of several citations including the New York Fashion Critics Award and the Nieman-Marcus Award.

Mr. Robert A. Hickerson—Textile Engineer and Silk Expert

For six years Robert Hickerson, as a civilian employee of the United States Government connected with the military occupation of Japan, was concerned with the rehabilitation of Japan's silk industry. He also worked with the cotton, rayon, ramie and hemp industries of Japan. He took Japanese delegations through European countries and the United States in connection with the setting of international Classification Standards for the silk industry of Japan. While doing this, he examined production and testing methods in many countries. Later he served for two years as the representative in Japan of the International Silk Association of Lyons, France. In this capacity he was responsible for liaison between Japanese weavers and the International Silk Association and for the promotion of Japanese silk textile production.

Mr. Hickerson has had experience with handloom production, mill production and trade practices, with the Cottage Industry Association of Japan. He served in Tokyo as resident manager for an import-export firm until 1955.

APPENDIX F

PHOTOGRAPHIC RECORD.

During its tour of handloom weaving centres, the team made a photographic record of many of the most interesting looms, methods of weaving, fabric displays and other matters related to the problem of developing handloom fabric displays and other matters related to problem of developing handloom fabric exports. Some of these raphs will be used to illustrate this report, if the Government dia desires that a printed and illustrated edition be prepared. is recommended that the entire collection be made available for the se of the proposed New York and Bombay Sales Centres when they are established.

APPENDIX G

FASHION SKETCHES

These sketch suggestions do not presume to be finished designs, but might serve simply as directions to be more fully explored. Admittedly there is much between the idea and the successful finished article. There are countless areas of design development possible for made-in-India articles using handloom fabrics stimulus for these design activities will undoubtedly com growing awareness and interest in Western fashion.

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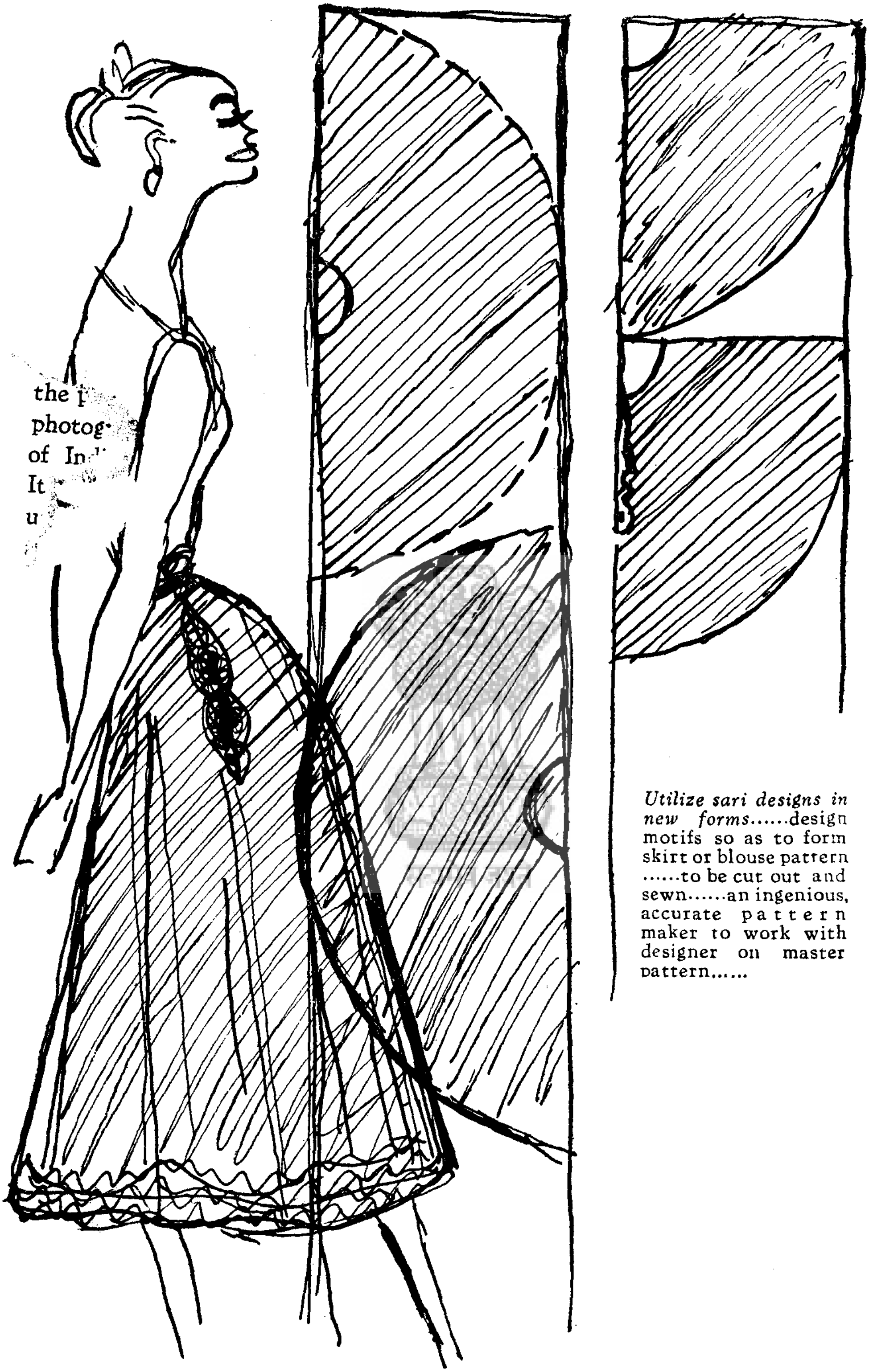
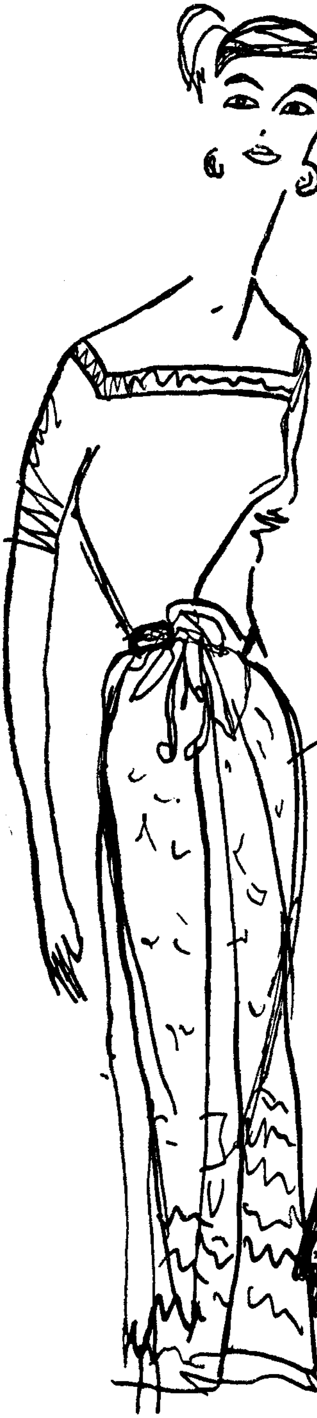
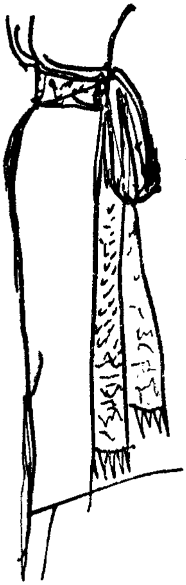


*Utilize sari designs in new forms......*design motifs so as to form skirt or blouse pattern ......to be cut out and sewn......an ingenious, accurate pattern maker to work with designer on master pattern......

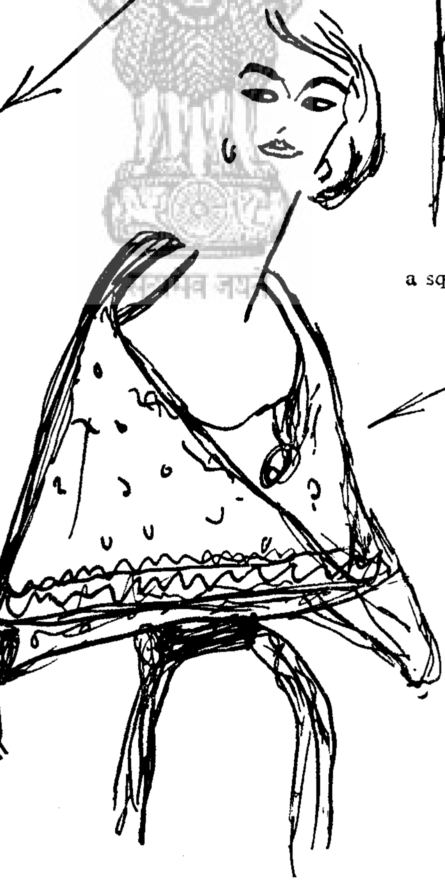
Design Project—use all the existing sari patterns in new shapes and sizes......



a skirt length—just long enough to wrap around and tie



a long narrow sash

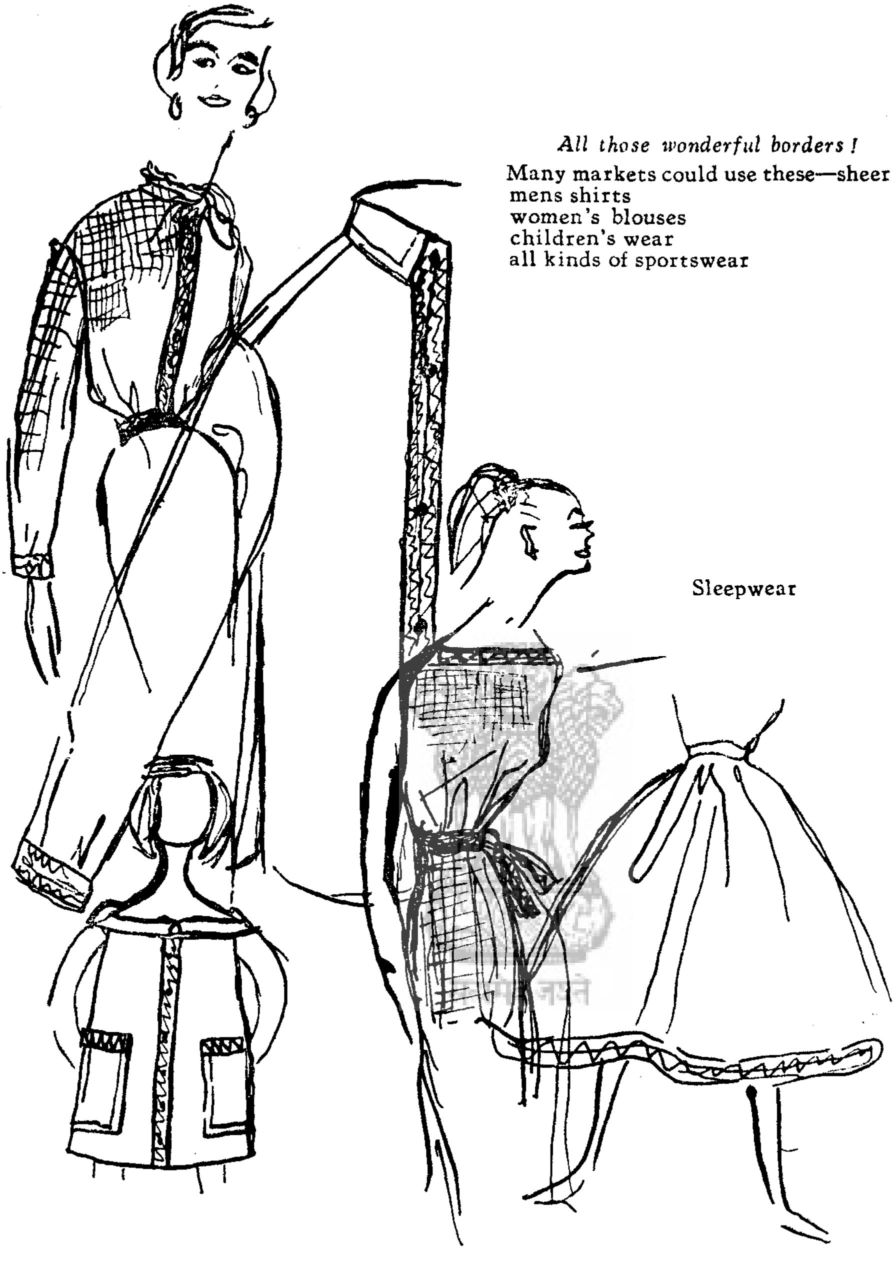


a square of silk for a 3 cornered shawl

also
why not do a shorter sari for foreign export—may be a 4 yard length?

All those wonderful borders!

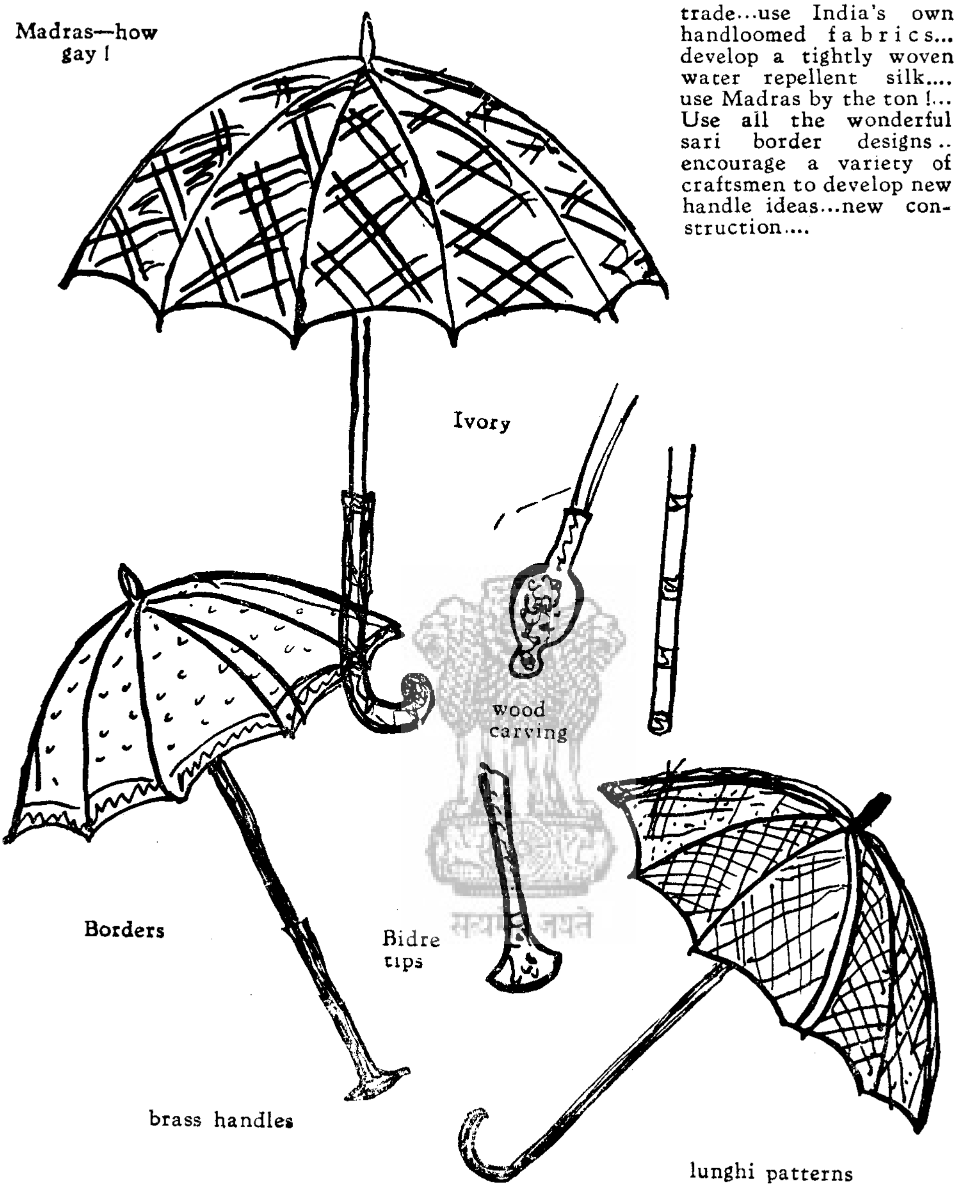
Many markets could use these—sheer bordered cottons
- mens shirts
- women's blouses
- children's wear
- all kinds of sportswear



Sleepwear

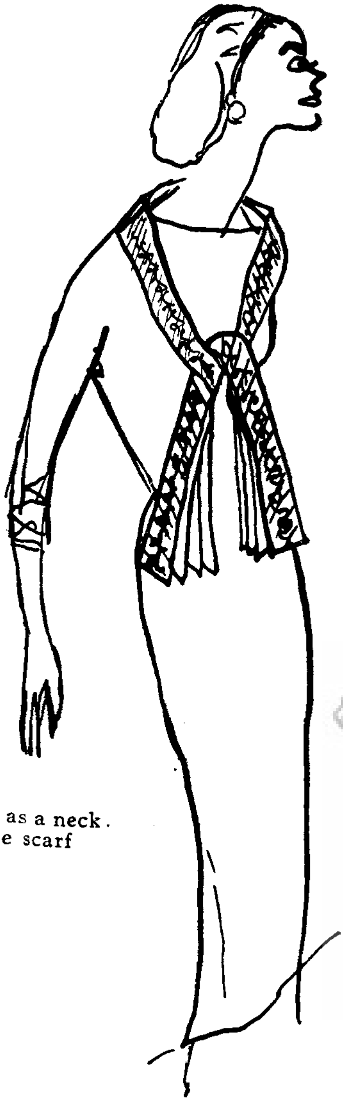
petticoats

India is colar—let colar accelerate an umbrella trade...use India's own handloomed fabrics... develop a tightly woven water repellent silk.... use Madras by the ton !... Use all the wonderful sari border designs.. encourage a variety of craftsmen to develop new handle ideas...new construction....

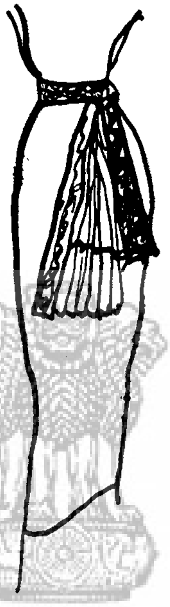


The Pleated Angavastrum

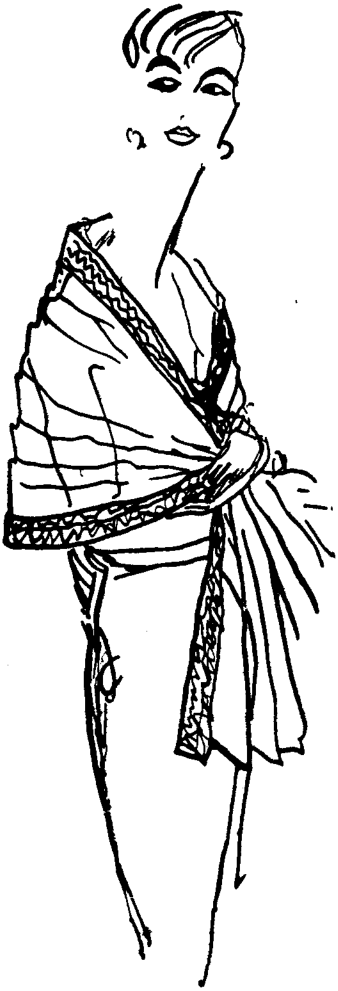
Develop this regional man's scarf as a fashion accessory for U.S. markets—perfect as a tourist item—



Worn as a necklace scarf

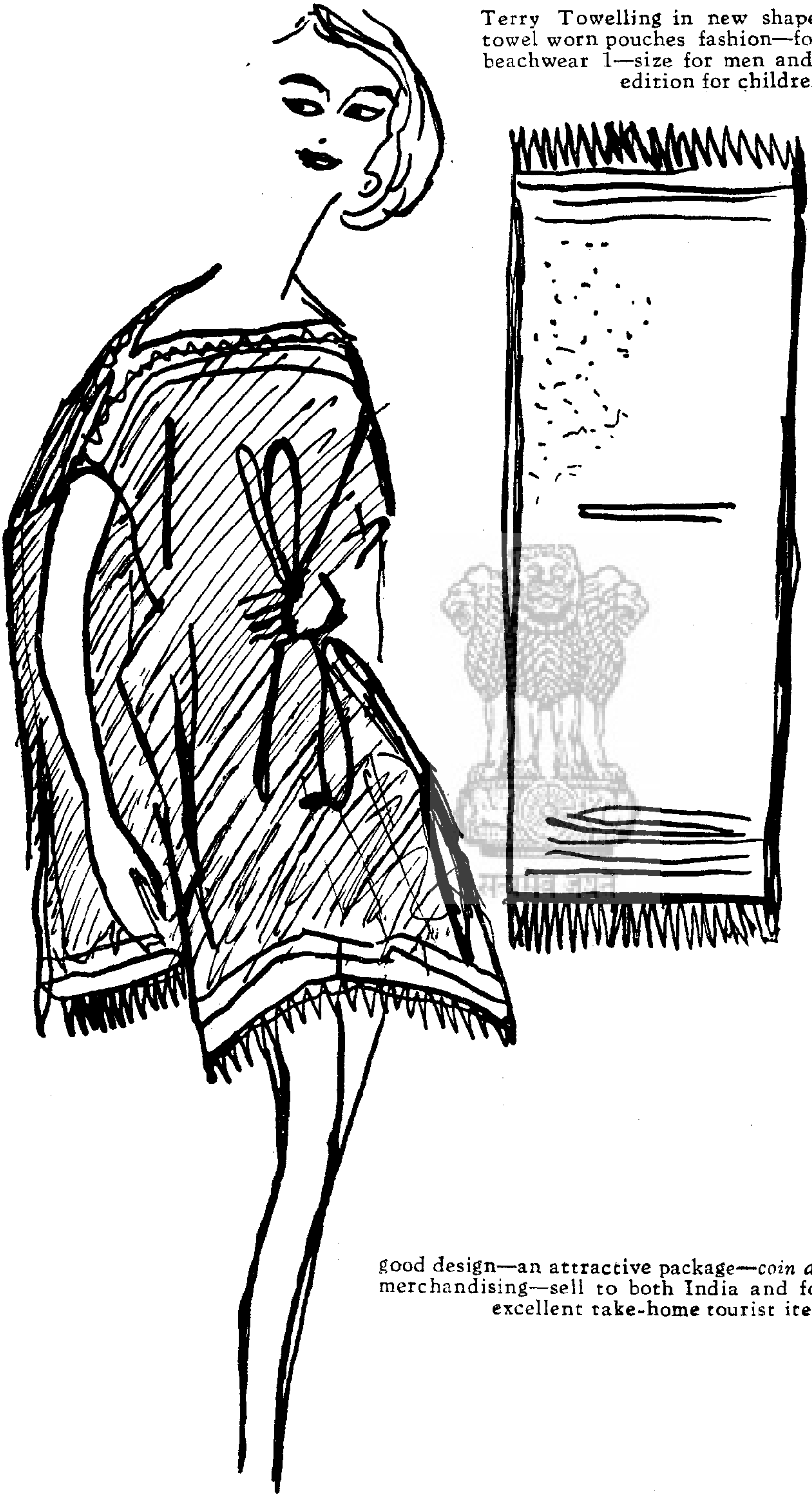


as a sash



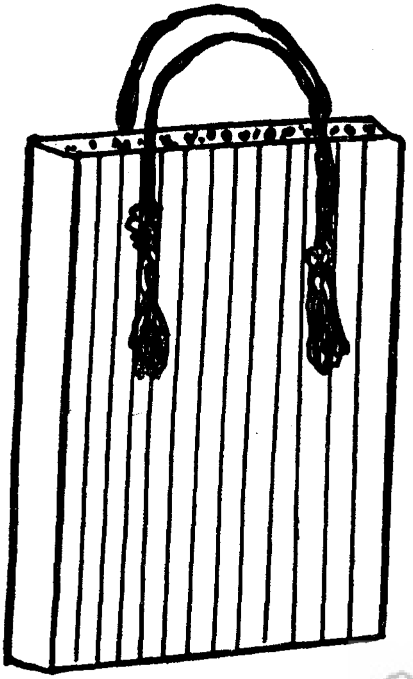
As an evening shawl

Terry Towelling in new shapes—A slip—over towel worn pouches fashion—for after bath for beachwear 1—size for men and women smaller edition for children—



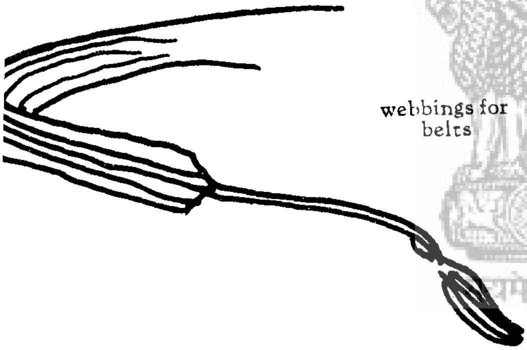
use color !

good design—an attractive package—*coin a name*—planned merchandising—sell to both India and foreign markets—excellent take-home tourist item......



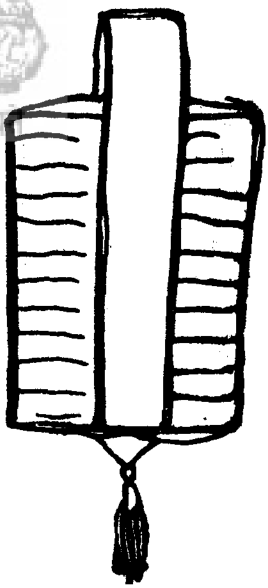
Develop Accessory Designs

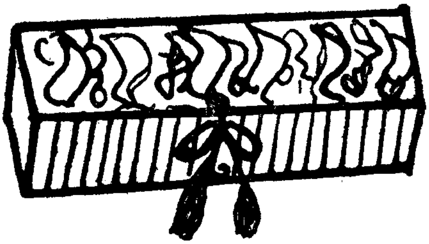
utilizing handloom fabrics give more thought to varieties of carry all-bags...... especially as tourist items..... more larger sizes......more interesting shapes......more imaginative approach......utilize skill in tussle making for trims



webbings for belts

Why not a design contest? Stimulate fresh approach to uses of handloom fabrics......



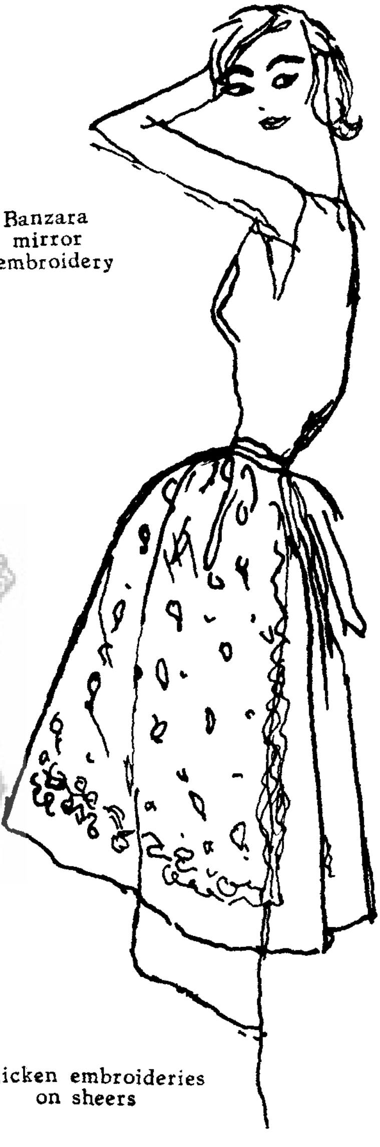


Sari borders....

GAY GLAMOUR APRONS

Silk saree borders

Banzara mirror embroidery



Chicken embroideries on sheers

CHART 4

WEAVERS SERVICE DIVISION OF INDIA HANDLOOM FABRICS EXPORT CORPORATION

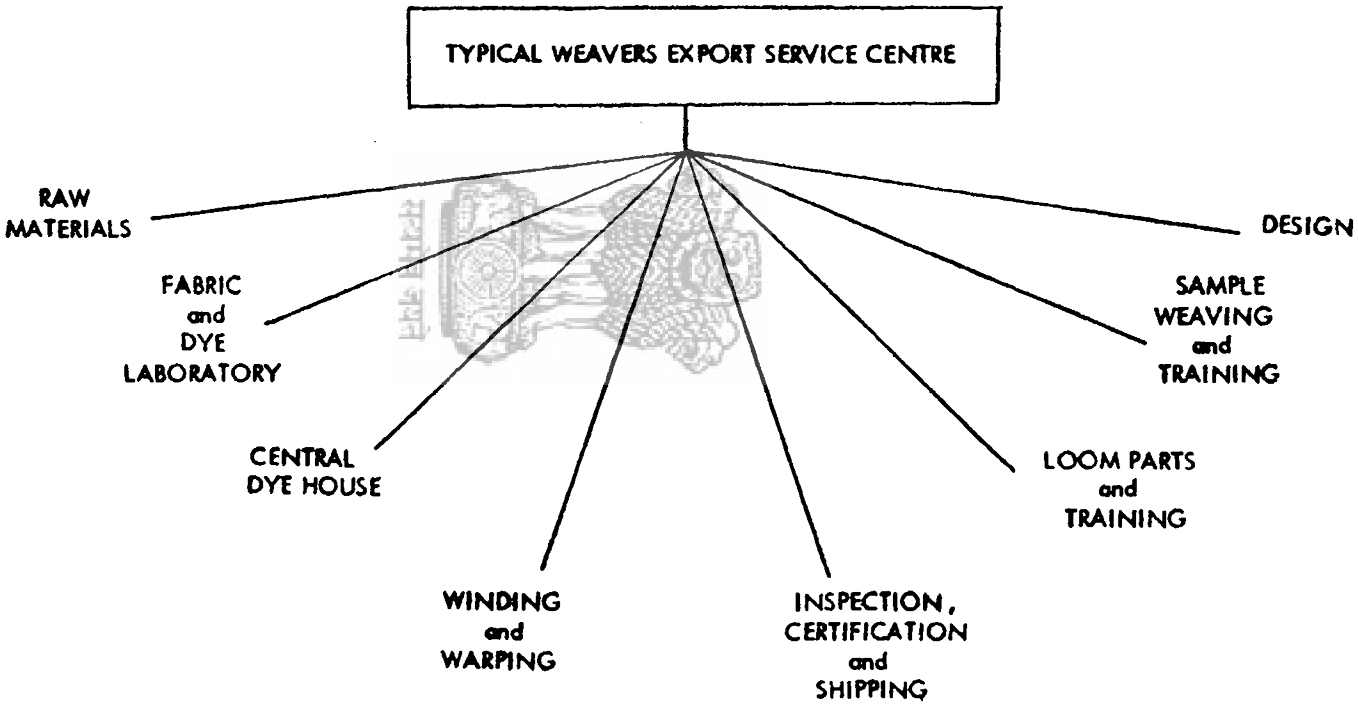
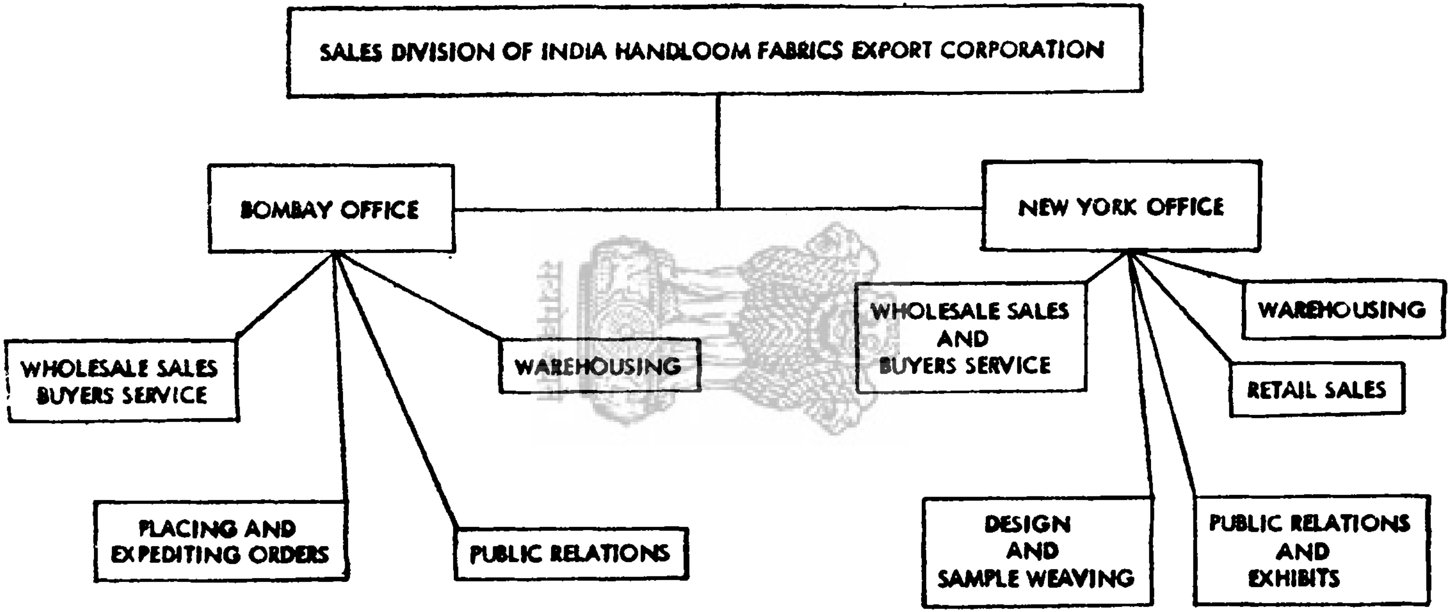

TYPICAL WEAVERS EXPORT SERVICE CENTRE
RAW MATERIALS
FABRIC and DYE LABORATORY
CENTRAL DYE HOUSE
WINDING and WARPING
INSPECTION, CERTIFICATION and SHIPPING
LOOM PARTS and TRAINING
SAMPLE WEAVING and TRAINING
DESIGN

CHART 5


SALES DIVISION OF INDIA HANDLOOM FABRICS EXPORT CORPORATION
BOMBAY OFFICE
NEW YORK OFFICE
WHOLESALE SALES BUYERS SERVICE
WAREHOUSING
PLACING AND EXPEDITING ORDERS
PUBLIC RELATIONS
WHOLESALE SALES AND BUYERS SERVICE
WAREHOUSING
RETAIL SALES
DESIGN AND SAMPLE WEAVING
PUBLIC RELATIONS AND EXHIBITS